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War and Eye Injuries*

Olga Sitchevska, M.D.

TIMELY word on eye injuries on the battlefield, air raids and eye injuries, and poison gases and eye injuries.

WAR eye injuries may be due to: (1) casualties in the battlefield; (2) air raids; and (3) gas injuries.

Eye Injuries on the Battlefield

External injuries, like lacerations of the lids, conjunctiva and cornea, are trivial in themselves, but meticulous early repair and suturing of the lids are very important, as a terrible looking lid, sometimes torn away from the eyball, may become good looking and normal in function, and thus plastic repair later on can be prevented.

There are non-perforating and perforating injuries to the eyeball itself. The non-perforating wounds by flying particles may cause: (a) hemorrhage into the anterior chamber (hyphema), which indicates an intra-ocular injury; and (b) vitreous hemorrhage. The latter type of hemorrhage frequently absorbs completely, but if it is extensive, it may cause a detachment of the retina while shrinking and pulling the retina away from its attachment. A hemorrhage in the retina is also possible, and if it occurs in the macular region, the trauma to the retina cannot be remedied and loss of central vision results. Concussion injury can also cause a hole in the macula and opacity at the posterior pole of the lens of a rosette-shaped form, or luxation of the lens. Rupture of the choroid and the tearing away of the iris from the ciliary body (iridodialysis) can also be caused by concussion. In all cases of

* Presented at the clinical conference of New York Infirmary for Women and Children, May 18, 1942.

hemorrhage, a complete rest in bed is imperative; and atropine and a bandage to the injured eye (sometimes also to the sound eye) are necessary until the hemorrhage begins to absorb.

Mr. Law of England reports that he had seen in Moorfield's Hospital not only the first eye casualty, but the first casualty of any kind in England—it was an intra-ocular foreign body, a fragment of a small hand grenade which hit the eye of a soldier at the Maginot Line in October, 1940.

The perforating wound in war is due to a foreign body which may or may not be retained in the eye. Doherty says: "The most frequently found foreign body in the orbit in the first World War was the shell fragment which, due to its jagged contour, produced terrible deformity—the optic nerve might be severed and the papilla lacerated as if torn away."

The danger in dealing with a perforating injury is the possibility of infection, and chiefly that of sympathetic ophthalmia. Sympathetic ophthalmia consists in a plastic iridocyclitis which develops in the second eye as a result of perforating injury in the first. The injured eye is called the exciting eye and the other, sympathetic. There are two rules to follow: (1) If the injured eye is red and tearing from 4 to 6 weeks after the injury, it should be removed; (2) if sympathetic ophthalmia has developed in the other eye, it is advisable to leave the exciting eye, as at times it retains more useful vision than the sympathetic eye. My own experience in Russia indicated that the danger of sympathetic ophthalmia is not as great as we think. During the Russian Civil War a number of children sustained eye injuries while playing in the fields by finding shells which exploded. Since we were short of instruments, many of the injured eyes were not removed and we saw very few cases of sympathetic ophthalmia.

The tolerance of the eye to various kinds of intra-ocular foreign material varies, and certain tissues of the eye will react differently to foreign bodies. The iris and ciliary body react more seriously to injury than the lens and vitreous. Copper usually produces a violent inflammatory reaction, and iron produces siderosis. The soluble iron hydroxide has a predilection for the epithelial tissues of the eye and stains them into blue-green; if the neuro-epithelium is involved, the vision becomes impaired. Wood and lead, which

are not magnetic, always present more of a problem than magnetic foreign bodies which can be extracted with an electromagnet, particularly if the foreign body is diagnosed by *x*-ray and is plotted as to the exact size and location. Glass can be tolerated by the eye fairly well.

Air Raids and Eye Injuries

The indiscriminating bombing of cities in England has produced many injuries to the eye. The *British Journal of Ophthalmology* (April, 1941) reported that, during one night of intensive air raids, at one large hospital in London there were, between midnight and 5 A.M., 280 corneal and conjunctival foreign bodies among members of fire service. Most of the foreign bodies were charred material.

Mr. O. M. Duthie reported at the Congress of the British Ophthalmological Society in 1940 that "ruptures [of the eyeball] had proved the most frequent of all serious injuries. Many cases of rupture, especially those due to flying glass, were virtually untreatable." E. B. Alabaster, at the same Congress, stated that 21 of 100 cases of eye injuries after air raids showed penetrating wounds caused by metal or glass.

Glass injuries are the chief concern in air raids. All glass must be picked out of the conjunctival sac. It is very difficult to see glass even with the slit-lamp and more difficult to extract it. Fortunately, in many cases glass works itself out even from deep wounds. If a piece of glass is lodged in the eye and shows no tendency to come out, the only indication for an operation is interference with vision. Mr. T. M. Tyrrell discussed the subject of eye injuries at the Ophthalmologic Section of the Royal Society of Medicine. He stated that a patient with a badly injured eye can be left alone for 24 hours without danger. The shock and restlessness of the patient with perforating injuries wear off by that time and he is in a better position to stand an operation. He had seen about 20 severe glass injuries, of which he had to remove 10 eyes because they were so badly damaged; in the others the glass perforated the sclera or cornea but the glass came out by itself; in some cases he had to do an iridectomy for a prolapsed iris, and a conjunctival flap to prevent infection.

In air raid casualties, the conjunctival sac is usually filled with mud and dirt. The sac should be irrigated thoroughly with a mild antiseptic solution for hours until it is clean before any operation is attempted.

Sir Richard Cruise (Law) devised a vizor for the protection of the eye, made of light weight duralumin and involving no interference when not in use. It can be used not only by soldiers, but also by civilians, air raid wardens, and firemen. It cuts off the visual field a little, but it gives a great sense of security. Sir Richard states that at least 50 per cent of the eye injuries could be prevented.

The question of supplying the soldiers and exposed civilians with non-shatterable glasses instead of the ordinary lenses is an important one, but it has not yet been considered by the authorities.

Measures have been taken in England to safeguard against the menace of flying glass; a transparent liquid is painted on the windows which prevents them from breaking. The New York Museum of Science and Industry shows, in a moving picture, the way the glass cracks but does not shatter under heavy impact, and sharp pieces don't fly through the air. Some department stores here sell this liquid. One quart, costing $3.50, will cover 80 square feet.

Gas and Eye Injuries

Lacrimators or tear gas produce profuse tearing, swelling of the lids and, at times, exfoliation of the corneal epithelium; but all these lesions heal quickly. Chlorine and phosgene gases produce a conjunctivitis of varying intensity, but mustard gas (dichlorodiethylsulphide) produces the most evil effect and its action is remarkable in its delayed nature.

In "The Official History of the War" (London, 1923), it was recorded that from 75 to 90 per cent of all mustard gas casualties presented some ocular involvement. About 25 per cent of all eye gas burns result in severe conjunctivitis and keratitis. The injury may be produced either by the vapor or by the actual liquid. (As stated by Hughes, Ida Mann of London, the famous ophthalmologist, produced experimental destructive corneal lesions by instillation of as little as 0.0004 c.c. of liquid mustard in rab-

bits' eyes and by exposure for 15 minutes to a concentration of 1:20,000 of vapor.)

A conjunctivitis is produced in two or three hours after exposure, the maximum effect of smarting, tearing, pain, photophobia, and swelling of the lids being attained in 24 hours. The severity of the condition depends upon concentration of the vapor; and the danger is greater where there is poor ventilation—basements or poorly ventilated lower floors (gas is heavier than air and it settles in low places).

The period of delay of effect is shorter in the eye than in the other parts of the body. The roughening of the cornea or the orange-peel appearance may occur early, so that advantage can be taken in doing something about those people affected. If the liquid mustard gets into the eye, the irritation is marked and there is even danger of inflammation of all the structures or tissues of the eye (panophthalmitis).

The mechanism of the action of mustard gas is not clear. Most likely the toxic action is due to liberation of hydrochloric acid by hydrolysis. The patient burned by mustard gas is put out of action because of severe conjunctivitis; in about 15 per cent there is a dead white band of burned conjunctiva between the lids, with a marked chemosis. This white band is due to coagulative edema, which compresses the vessels and impairs the circulation and nutrition of the cornea. The other parts of the conjunctiva and lids are markedly swollen, and a blepharospasm is present so that it is very difficult to open the lids.

The cornea is involved in about 10 per cent of all mustard gas burns, and convalescence requires about two or three months. There were cases of keratitis seen as late as 14 years after the war ended which were due to mustard gas damage. The late keratitis arises from a sclerosing action on the conjunctival tissue, which, by compression of the vessels, interferes with the nourishment of the cornea, a process which may take years (Law).

Prophylaxis in Eye Injuries from Gas.—The only prophylactic measure is to put on a gas mask as soon as the faint mustard or garlic odor is detected. Some experimenters showed that in rabbits saturated with ascorbic acid the action of mustard gas was minimized.

The treatment of mustard gas injuries is symptomatic. The immediate irrigation of the eyes with normal saline, sodium bicarbonate, 1 or 2 per cent, or boric acid solution, 2 per cent, is helpful; and some believe that dichloramine T, ½ per cent in chlorinated paraffin, is a good neutralizing solution. Cod liver oil will prevent adhesions (symblepharon) later on.

If the cornea is involved, 1 per cent solution of atropine or ointment should be administered. *No bandaging of the eye should take place*, as closing of the lids will aggravate the burn because of: (1) the accumulation of tears and secretion; (2) an increase of pressure on damaged and necrotic tissue; and (3) elevation in the temperature of the cornea.

The relief of severe blepharospasm can be obtained with a drop of pontocaine, as it is important to open the lids and reassure the patient that he is not blind. Cocaine should not be used because the sensitivity of the cornea is diminished and exfoliation of the corneal epithelium may be produced. Dark glasses should be worn, but they should be removed as soon as the patient feels better in order to avoid symptoms of neurasthenia.

Zinc sulphate, ¼ per cent, with ephedrine, are to be used in the period of convalescence. Contact glasses have been advised for use in cases of keratitis.

Hysterical blindness is not uncommon in wartime—a shell-shocked, wounded or blasted person is likely to complain of blindness. It may occur without physical injury to the eye; there may be functional blepharospasm, which can be followed by hysterical amblyopia.

Night-blindness may occur on a neurotic basis. "The blackout at present in England is being overworked as a cause of imagined injury to sight or eyestrain," according to H. M. Traquair. The blackouts are quite harmless to the eye unless the person has a definite vitamin-A deficiency.

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A View of Prevention of Blindness in Relation to Public Health*

Eleanor Brown Merrill

THE author points out that the prevention of blindness program, though centered under one agency for sound administration, must utilize all lay and professional resources, all voluntary and official agencies in the state having a common understanding of the problems of sight conservation.

TO ONE who spent a large part of her childhood in West Virginia it is indeed a pleasure to have the opportunity of participating in this conference and of meeting those who represent progress in the state health program. As I look back upon the summers on my grandmother's farm in Greenbrier County, certain things stand out with clarity—a swimming hole set in the shaded turn of Meadow Creek, the blackberry patches laden with glistening fruit, the fragrant campfire, the songs and laughter; above all, the restful sweep of meadow and the glory of mountain ranges. Of minor importance to me was the fact that for three successive summers typhoid fever entered into the family group—recognized now as a natural consequence of the children's assuaging their thirst from a well near the stables. The incidence of tuberculosis among the families who lived a half mile or so from the main house carried, too, no real significance in the mind of one who reveled in the freedom of country life, untrammeled by rigid health regulations.

It would be difficult fully to acknowledge the value of the kind of life offered in the Greenbrier County of those days—a life that called for hardiness and adaptation to the inconveniences of a fairly remote locality, while filled with satisfying companionship

* Presented at West Virginia State Health Conference, Martinsburg, West Virginia, May 11, 1942.

and enjoyment of uncomplicated native resources. It would be equally difficult in this day to ignore the apparent lack of health provisions which in more recent contacts with the state are seen to be increasingly effective.

Because of this early experience in West Virginia, word that the State Department of Public Assistance expected to develop a comprehensive program for prevention of blindness was received with enthusiasm, and the National Society for the Prevention of Blindness welcomed the opportunity to join with the Department's director in considering possible steps toward this end. Certain recommendations have been presented, and it is my understanding that during this conference or shortly thereafter announcement will be made by a Department representative of the anticipated program. It is the present speaker's assignment to discuss those phases of the state prevention of blindness or sight conservation activities which relate particularly to the public health program and either directly or indirectly come within the functions of state health administration.

First, let me say that prevention of blindness cannot be looked upon as an isolated movement, nor achieved to any appreciable degree through sporadic and unrelated attempts. Successful accomplishment depends on the co-operative efforts of practically all existing agencies concerned with human welfare, each of which must assume its share in working towards a common goal. Naturally, many aspects of such a program come within the realm of public health.

Let me be specific and speak in relation to West Virginia. It happens that this was one of the first states to enact a law requiring use of a prophylactic in the eyes of babies at birth. Years ago in the National Society's office, when other sections of the country were considering similar legislation, our inclination was to use the West Virginia bill as a model, providing as it did for compulsory reporting of cases, use and distribution of a prophylactic, reporting on the birth certificate, and provision of medical care for indigent cases.

In the first year of which the National Society has record of children in the schools for the blind at Romney, the percentage of pupils enrolled whose blindness was due to ophthalmia neonatorum

was 22. The latest count, taken for 1939–40, shows 7 per cent of pupils in both the white and colored schools blind from this cause, with no new entrant during the year. This is a striking decrease, but intensification rather than lessening of effort must be had if the good accounting is to be maintained, and such might well include a further strengthening of the law which would compel investigation of ophthalmia neonatorum cases by health authorities in order to place the responsibility for its having occurred. In the year 1936–37, the amount of prophylactic distributed in this state was sufficient for 26 per cent only of the live births. Does this fact indicate the need for further education of both professional personnel and of the public?

With regard to prenatal factors in relation to eye health, legislative provisions have also an interesting significance. A recent classification of causes of blindness, which used findings among 20,000 adults in 10 states and among pupils in schools and day classes for the blind, lists 10 per cent of the children and 51.4 per cent of the adults as suffering from blindness of prenatal origin. The incidence in West Virginia among children is slightly above, and among adults appreciably below, the average. Existence of a law compelling premarital examination for syphilis leads one to believe that these percentages in future years may be considerably reduced; it is to be hoped that provision will also be made for thorough, compulsory prenatal examinations and for such correction as may be possible of transmissible or otherwise dangerous conditions.

The latest report of the West Virginia State Health Department calls attention to the program established under its Venereal Disease Bureau, made possible by what is apparently a very fine co-operative relationship between county health units, the Department of Public Assistance, state and county medical societies, private physicians, graduate nurses and public health personnel. As this program progresses, and data in relation to the diagnosis and treatment of venereal disease become available, facts will no doubt be disclosed as to the incidence of eye involvement. It will be interesting to note these in comparison with figures gathered from studies elsewhere and in relation to the general estimate that 12.7 per cent of blindness in the United States is due to syphilis. Cer-

tainly, there is opportunity to conserve vision through activities directed at the prevention and cure of syphilis, and this is an aspect of the program which comes very definitely within the province of public health organization. Its urgency is accentuated at present with the upspringing of large and congested industrial centers and concentration near army camps. Reports indicate that there has been a decided increase in the incidence of syphilis and gonorrhea in the neighborhood of some of our war production plants, in spite of many preventive efforts; this fact should not be accepted as discouraging, however, but rather as a challenge to those of us who can see the remedy and have the ingenuity to plan and carry through effective control measures.

In the past year or so there has been a vast increase of industrial activity in West Virginia. To see former residential and farm areas now taken over by various kinds of manufacturing brings a vivid realization of what "all out for production" means to a community and of what must be the many problems involved in such change. "More planes, more tanks, more guns . . . more ships to carry them" is the slogan of the National Safety Council in its campaign just started to prevent accidents and conserve manpower; unless the Council is successful in its drive and in the objective of securing help from every volunteer and public agency concerned, a slogan equally appropriate through the days to come will be: "More hazards, more accidents, more ill health, more blindness." That seems a strong statement, but already the accident rate has risen sharply since 1940; the Bureau of Labor Statistics (United States Department of Labor) has stated that with an 11 per cent increase in employment an increase of 29 per cent in accidents has been noted. A logical supposition is that a steadily growing frequency of eye accidents will follow unless a very aggressive counteractive program is instituted. Recently, the National Society for the Prevention of Blindness undertook a fact-finding survey to determine the extent to which measures are being adopted for conservation of sight in industrial plants. The summary of findings from industries reached so far, small in number but representing some of the large, well-organized companies in the United States, shows that, while conditions relating to general safety are quite fine in their provision for medical supervision, first

aid and nursing service, protective equipment and general education, provisions relating specifically to eye health are far from adequate. We can be quite sure that conditions in smaller plants throughout the country are much less favorable and that in them eye health receives, proportionately, even less emphasis.

The protection of eyesight in industry is more than a question of safety equipment and first aid. As brought out by the National Society's findings and other current studies, there is great need for emphasis on pre-employment and periodic eye examinations which will insure the finding and correction when possible of disabling conditions; there is need for such analyzing of skills and physical limitations as to permit placement of those with impaired vision in jobs where the particular handicap will not be a detriment; there is need for medical and nursing care of eye injuries; there is need for raising the standard of illumination, for establishing proper hygienic regulations, for creating sound eye health habits in management and employees alike. In all these aspects of a safety program, state health departments, through their bureaus of industrial hygiene, have, of course, an important part and their influence will be felt in bringing about a betterment of procedures within industry and a community understanding of the matter. In this connection reference is made to an interesting project undertaken by a large concern, with which the National Society is in touch. The company plans to provide each of its employees with an attractively prepared pamphlet carrying instruction on eye health practices both within the plant and at home. Such a message, it is believed, will bear special weight because of its significance to the whole family.

Report of the Committee on Conservation of Vision to the State and Provincial Health Authorities of North America in March called attention in particular to programs for the control of trachoma in Arkansas, Illinois, Indiana, Kansas, Kentucky, Missouri, Oklahoma, Tennessee, Virginia and West Virginia. In some cases such programs are being carried through the establishment of special units, in others through existing agencies—all directing their energies towards locating every case of trachoma and bringing it under treatment. One of the brightest spots in the prevention of blindness picture today is the opportunity given through the use of

sulfa-derivatives to arrest the progress of trachoma and effect a cure in early stages of the disease. A dreaded cause of blindness for many years, and one that, under present shifts in population and congested areas, might have meant almost certain increase in the incidence of visual loss, no longer carries so grim a threat; however, by very reason of the increased security through scientific measures, trouble may arise through a lessening of effort, and in the report just referred to all health officers are warned to be on the lookout for the outbreak of trachoma in unexpected places.

As one reviews in some detail these progress reports of trachoma control, it is heartening to see note in one state of a marked drop in the number of new cases and reduction in the amount of intensive treatment for old chronic cases; in another, a decrease in the number of patients requiring hospitalization; in all, satisfaction with the sulfanilamide treatment—and everywhere an opportunity, through the examining centers, stationary and mobile, to locate trachoma in its early stages and to save sight. Moreover, opportunity is seen through joint co-operation of the several responsible agencies and co-operation of local groups to so broaden activities of these diagnostic services as to include attention to eye conditions other than trachoma. In the largely rural states, particularly, this would seem a logical and sound development, with possible integration of such services into the regular state medical treatment program.

It should not take a war to make us all conscious of the importance of good eyesight and of an apparent laxity which shows now through findings in the selective service examinations. The wide extent of defective vision among men otherwise fit for military duty has surprised many. It necessitated lowering of restrictions after the early induction periods in order to allow recruiting of a larger number as required. In the classification of registrants through March 15, 1941, in the New York City area, eyes stood first among the fourteen medical reasons for assignment to limited military service only, and fifth among the medical reasons for rejection. Included in the former group are those having remediable conditions, and a report from Col. Samuel J. Kopetzky, Chief of Medical Division under the Selective Service Administration in the New York City area, tells of the program of rehabilitation started in

August, 1941, through co-operation of the local Association of Medical Social Workers and of the medical profession, with a view to obtaining needed treatment, correction when possible, and reclassification. Among those disqualified for military service of any kind we find 3.13 per cent of the 115,569 examined; in both groups appear conditions that might have been prevented or checked in the early stages. Such findings—and in reports some months ago for the whole United States eyes stood second in reasons for rejection—present a challenge to those of us concerned with prevention of blindness and sight conservation, and they provide a basis for action through health, educational and welfare services, and also through voluntary effort, the pattern for which has perhaps never before been so clearly defined.

I have been asked to suggest how a prevention of blindness program fits into the health services of a state, or, in other words, what aspects of a prevention of blindness program are related to a state's health services. It would be easier to name where such relation does *not* exist for, to repeat a point made earlier, results can be achieved only through a wholehearted working together and a sharing of responsibilities. Certain functions that fall specifically within the realm of health administration have been briefly discussed; others might be added, as, for instance, the tasks of seeing that every midwife is trained in proper care of the eyes at birth; that all communicable eye diseases are reported and control measures taken; that laboratory and statistical data are complete; that means are developed for discovering visual defects in preschool children and for securing correction at an early age; that school eye health services are adequate, with nurses trained in case-finding and follow-up procedures; that education of public health nurses includes special instruction in eye health; that active part be taken in a program of public education.

Perhaps some of you were thrilled, as I was a week or so ago, in reading of General Giraud's escape from a Nazi prison. Over a period of eight months, through packages received from his wife, he collected strands of thread which, woven one by one into a cable, finally gave him the chance to slip through the fortress window into freedom. We can visualize the prevention of blindness program as just so many threads gathered into a cohesive whole. Centered

under one agency, as it must be for sound administration, it must utilize and operate through the services of all resources in the state, lay and professional, which will have a common understanding of the problem. Just so far as there is co-operation from everyone in the program will there be success and a saving of sight within the State of West Virginia.

Aniseikonia*

Homer B. Field, M.D.

DISCUSSES the nature and methods of detecting aniseikonia and how the condition may be corrected.

RECENTLY, in the popular pseudoscientific literature published for the general public, there have appeared several articles on aniseikonia, with the result that patients have become more familiar with the term than has the average physician. This frequently leads to a misconception of the condition by the patients. I constantly receive inquiries from physicians who, at the instigation of their patients, wish to know something of this condition. To answer these questions I have written this paper.

The Nature of Aniseikonia

Aniseikonia is defined as a difference in the size and the shape of ocular images in the two eyes. It should be emphasized that the word ocular rather than retinal image is used. The image with which the measurement of aniseikonia is concerned is not the optical image which falls upon the retina, but rather is the image which arrives at the higher centers of vision and is then projected in space as the perceived object. In the process of the perception of this resultant image there are several factors: (1) the object seen; (2) the external medium for the light rays; (3) ordinary spectacles worn by the patient; (4) the ocular media, *i.e.*, cornea, aqueous, lens and vitreous; (5) the refractive state of the eye (*e.g.*, myopia or hyperopia); (6) the visual pathway; and (7) the higher visual centers in the brain, involving projection and perception. Any of these factors may alter the size or the shape of the ocular image.

* Extracted, with permission, from *Journal of the American Medical Association*, May 9, 1942.

It has long been recognized that the two eyes of the same person do not see alike. If a person is farsighted in one eye and nearsighted in the other, it can be assumed that the object he sees is larger through the convex lens for his farsighted eye than the object he sees through the concave lens of his nearsighted eye. This is based on the fact that a biconvex lens magnifies, while a biconcave lens minifies. Cognizance of this difference in the imagery of the two eyes was taken as early as 1863 by Donders, but he and the investigators who followed him felt that nothing much could be done to correct the condition. While attempts at correcting differences in size between the images produced by the two eyes in monocular aphakia following surgical intervention for cataract were started from time to time, no great effort was made to correct the differences in the images produced by so-called normal eyes until the advent of Professor Ames and his work at the Dartmouth Eye Institute.

Following the lead of certain European writers, the group at Dartmouth began to investigate the optics of vision and gradually worked into the realm of binocular vision and space perception and the effect of aniseikonia on this mechanism. It quickly became apparent that the difference in size between the images in the two eyes was usually small—a matter of only a few per cent. Rarely are large differences noted.

At the Dartmouth Eye Institute a number of pieces of apparatus have been invented with which studies are carried on by the members of the institute on such matters as the effect of aniseikonia on the perception of flat surfaces and on space orientation. One of these instruments which has received a great deal of publicity is the "leaf room." This room is designed so that the observer sits at one end and sees three walls, the floor and the ceiling. The walls are covered with equal sized leaves, and no pictures or other objects are allowed to destroy their continuity. As the observer looks at the room, he will get certain distortions of its shape and size if he has an aniseikonic condition.

Another instrument, which has received equal publicity, is the tipping table. This is a flat table top mounted on a universal joint so that it may be tipped in any plane. The effect of aniseikonia on the perception of flat surfaces is one of tipping. As a person

with aniseikonia looks at the table top he will find that it does not appear level when actually it is. He is asked to set the table level, and a measurement of the strength of the aniseikonic lens required to make the table appear level may be a measurement of his aniseikonia.

Other instruments, which have rather fancy names, have been devised during the investigation. These are the "squirrel cage," which gives the subject a three-dimensional target to examine with aniseikonic lenses, and the S curve machine, which has been developed to study the "induced effect" of size lenses. A constantly changing host of instruments is being used at the institute, all with the idea of research in aniseikonia.

Methods of Detecting Aniseikonia

There are two general methods of measuring differences in size of images produced by the two eyes: (1) the direct method, involving use of the eikonometer; and (2) the indirect method, in which functional tests are used to study tipping effects and distortions of the horopter. The latter method is difficult to use because of measurement factors and the extreme amount of careful judgment the patient must use. . . .

There are no symptoms which can be definitely called aniseikonic. If the difference in size between the images in the two eyes is considerable, a suppression may take place. If the correction is slight, the symptoms may be those of asthenopia, i.e., ocular fatigue, headaches with use of the eyes, lacrimation, and burning and itching of the eyes. Only rarely does a patient complain of tipping and distortion of objects, especially flat surfaces. Aniseikonic patients frequently complain of faulty space perception and inability to judge distance and the flight of a moving object. Ocular distress which cannot be relieved by the use of ordinary procedures in refraction and muscle balance and correction of fusion difficulties should cause one to think of aniseikonia as the fundamental defect.

The Correction of Aniseikonia

After reading the articles in popular literature one is apt to get the mistaken conception that aniseikonia is a common defect. Actually, it is found that probably not more than 2 per cent of

the general population have correctible aniseikonia. As persons are measured routinely with the eikonometer, it is found that the images in the two eyes in practically all of them will evidence some differences. Usually this is 0.25 to 0.50 per cent. Persons who have been measured because their symptoms were thought to have an aniseikonic origin were found to have, on an average, 1.50 per cent to 1.75 per cent difference in size of the images.

It is well to state here that not all patients shown to have aniseikonia are entirely relieved of symptoms by wearing the aniseikonic lenses. Roughly speaking, only about one-third of the patients given the glasses will report that they are entirely relieved of their symptoms. Another third will report partial relief, and the last third will frankly report that their money has been wasted and that they have not been helped.

In the correction of aniseikonia three general ideas must be impressed on patients:

1. Binocular vision must exist in some form in order that tests and proper correction may be made.
2. This work is not a panacea for headaches and ocular distress.
3. Some persons respond in such a way to the action of aniseikonic lenses that it is necessary to use temporary prescriptions in the form of clip-on lenses to study the subjective response of the patient before a permanent lens is made. If this is not done, possibly there will be a certain shift in the correction in a short time necessitating the outlay of considerable money.

The cost of spectacles containing aniseikonic lenses averages about $20 to $40, depending on the correction required and the type of glasses the patient desires.

It has been my experience in the department of ophthalmology of Northwestern University Medical School that the majority of patients who are referred for aniseikonic measurement are in need of (1) a more adequate refraction and (2) an investigation of binocular vision from the point of view of muscle balance, vergence powers and stereopsis. The vast majority of patients will be relieved of asthenopic symptoms if the needs mentioned are first properly attended to. After that has taken place, aniseikonia should be considered.

NOTE.—Aniseikonia forms the subject matter of the following articles:

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Sight Restoration in Indiana as Conducted by The State Department of Public Welfare*

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AS a state supervising ophthalmologist under the Social Security Act, the author discusses sight restoration in Indiana. Cataract, glaucoma, trachoma, pterygium, glasses and other treatment are the topics presented.

THE present law for assistance to the blind in Indiana became effective July 1, 1936; the Act provided for eye treatment, and this service began to function January 1, 1937. By June 30, 1941, there had been 925 applicants, 514 men and 411 women approved for medical care by the Department of Public Welfare. The case load is fairly well stabilized at a little more than 2,400, due largely to the departmental policy of approving treatment wherever there is a reasonable chance to restore vision (see Cataract), stabilize sight without further loss (see Glaucoma), or to forestall the onset of blindness in eligible persons even though vision might be but little impaired at the time of application (see Pterygium).

Age eligibility includes all men over 21 years of age and all women over 18. Visual eligibility for blind assistance requires that central vision is 20/200 or less, or in cases where it is better than 20/200 that the visual fields are contracted in the widest diameter to 20 degrees or less in the eye with the wider fields. Applicants for eye treatment are not limited to these terms of visual eligibility, for the intention here is to prevent blindness.

Medical records to establish eligibility for monthly assistance or eye treatment are executed by a state-wide staff of about 125 medical graduates. Their individual preparation of records reflects

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their training for the practice of ophthalmology, their experience in that field, and their personal co-operative interest in welfare problems. The value of a report is measurable by the same factors. Most applicants are first examined many years after the occurrence of the original disease or injury that led to impairment or loss of sight. This fact leads to errors in diagnosis unless the surgeon distinguishes between the immediate effects of disease or injury, and the changes that occur in tissues as a result of such disease or injury over a long period of time.

In such a large group of examining physicians, ranging from beginners to old-timers, uniformity in reporting cannot be expected. It is the province of the state supervising ophthalmologist to reconcile differences and inequalities in order to provide equitable consideration for all applications. That official is favorably situated to render decisions as to visual eligibility in a strictly impersonal and impartial capacity; this arrangement protects the county examiner from possible pressure by local prejudices and opinions.

Any individual who has been approved for eye treatment has the right to select the attending physician, subject to the approval of the state supervising ophthalmologist. In most instances the patient is assigned to a physician according to the best judgment of the county department.

Workers in blind assistance and eye treatment programs become acutely aware of disheartening handicaps and limitations. Applicants are mostly past the age of 50 years and unemployable; they generally come from a social stratum where they are low in physical vitality, poorly nourished, dwelling in crowded conditions without modern facilities for proper hygiene, and too often they lack ambition for visual improvement or betterment in any way if individual effort is required. Their spirit is without wings. They live from day to day. Tomorrow has its own problems; why worry about them until they come? It is this attitude, along with subnormal conditions, that accounts for many failures in attempted treatment. As patients these folks fail to recognize, or at least to be guided by, the importance of continued care of the eyes following surgery or treatment of acute conditions, and persistence in continuous treatment for chronic conditions. A part of the treatment plan is to teach the necessity of eye care as long as it may be necessary.

A special class declines eye treatment because of religious beliefs against doctoring and doctors, fear of hospitals and the surgeon's knife, or discouragement by relatives and nosey neighbors. Indiana has provisions for handling such situations where public policy is best served thereby.

The Divisions of Assistance to the Blind and of Eye Treatment of the State Department of Public Welfare were created to deal with individuals who are blind or whose vision is in jeopardy from disease or effects of injury; they were not created to assume any of the responsibilities of public health services in the control of infectious diseases or the prevention of injuries.

We present our experiences with sight restoration as they have impressed us, with special interest in results.

Cataract

As long as the crystalline lens of the eye is clear and transparent it transmits light and helps to focus light rays on the retina to form images. Whenever the crystalline lens becomes opaque, it is called cataract. The onset of cataract is possible throughout life, from before birth until death. Cataracts that exist at birth are called congenital and usually have an hereditary background, with some other members of the family similarly afflicted. Those that appear after birth are designated acquired cataracts. Persons who have diabetes are prone to develop them, and to a lesser extent do those who have arteriosclerosis. The great majority of cataracts develop in persons who are more than sixty years of age and the cause is unknown, so they are called senile. All theories that attempt to explain the development of senile cataract lose potency when confronted with the fact that some individuals develop cataract in one eye but not in the other. In our experience the greatest incidence is in the age group 60 to 70, with the age group of 50 to 60, second.

Cataract varies in rapidity of development. Mostly the progress is slow; in early cases medical treatment seems to be effective in some persons in retarding or arresting the process, and sometimes minor opacities actually disappear while under treatment. In other and seemingly similar cases the cataract progresses to maturity regardless of treatment. Surgical removal of an opaque lens is the

only effective method for restoring sight; in our experience with 486 patients, 60 per cent regained vision of 20/40 or better; 14 per cent, better than 20/70; and 9 per cent, better than 20/200; while 17 per cent had 20/200 or less at the conclusion of surgical attention.

Those who had 20/200 vision or less are accounted for in three ways: 57 per cent of them actually gained in visual acuity; 18.5 per cent failed to obtain glasses or complete postoperative care; and 24.5 per cent lost more vision following surgery. This last group may be further divided into those who had some disease of the eye that was undetected when the surgical treatment was being planned, and those who developed some infectious or inflammatory disease of the eye in the postoperative period. Adequate preoperative ocular and medical examinations might be expected to reveal the presence of glaucoma, evidences of an old inflammation of the iris, or a degeneration of the retinal and choroid coats of the eye. Suitable preoperative preparation of the patient can be expected to minimize the liability to postoperative infections; due attention to possible sources of infection, such as teeth and tonsils or other structures that may harbor lurking or latent infectious organisms, can be expected to provide additional measures of safety and operative success.

Since the crystalline lens focuses light rays on the retina, and since this function is lost by removal of the opaque lens or cataract, a suitable spectacle lens must be worn to compensate for the lost crystalline. Therefore, the degree of restored vision depends upon the exact fitting of the lens to be worn. A stronger spectacle lens is required for reading and all near work, just as older individuals with normal eyes require a bifocal lens or a separate and stronger lens for near use. A successful cataract case is not completed until a spectacle lens has been fitted.

Glaucoma

Formation of images on the retina requires that there be no obstruction to light rays that pass through the eye to the retina. Therefore, the cornea, lens, and vitreous humor cannot be nourished directly by blood, which is opaque. A clear, transparent, lymph-like liquid is supplied instead. When this fluid is manufactured more rapidly than it passes from the eye, or when the drain-

age of fluid is not effected as rapidly as it is manufactured, the pressure inside the eyeball is increased. This higher-than-normal pressure constitutes glaucoma, or hardening of the eyeball. Primary glaucoma appears without previous disease of the eye, while secondary glaucoma is either a complication of or a result of antecedent disease, such as iridocyclitis. Without antecedent disease it is not known why an eye should become hard.

When a disease has no known cause it must be treated on the basis of medical or surgical experience. Mild cases of glaucoma are often sufficiently controlled by miotic drugs; that is, drugs that contract the pupil and so keep the iris taut. It is known that emotional disturbances tend to make a very serious glaucoma out of a mild one, and patients with mild glaucoma should be warned of this liability. Thus surgical is more reliable than medical treatment, even though many operations may have to be performed on any eyeball to make it safe from total and permanent blindness. A partial loss of vision due to glaucoma is seldom regained, as may be expected from the removal of a cataract, because glaucoma leaves permanent changes in the eye.

Our statistics have been built on results of surgical treatment. On January 1, 1941, there were 317 persons receiving monthly assistance because of blindness from glaucoma. Twenty-four of the more favorable ones were or had been approved for surgical treatment; they fell in the age groups of 60 to 70 and 50 to 60. Visual improvement followed in 12 cases, vision was stabilized in nine, one lost more vision and two never reported further. Early medical attention undoubtedly would have prevented much of the blindness due to this cause.

Trachoma

While cataract extractions have provided the most spectacular results in the restoration of vision, the Department has learned much more of real value in the prevention of blindness by the study of trachoma and its management. This is not to say that the results of treatment have been satisfactory; for they have not, because of the age groups to whom departmental services are not available. No female under 18 or male under 21 is eligible for any form of eye treatment, and those are the ages where best results are obtained

by treatment of this disease. Trachoma of itself is not blinding, but it gives rise to complications and tissue changes which are potentially and actually blinding; for maximum results the patients must be treated before the complications and changes occur.

The plan of treatment was put into effect July 1, 1939. It consists of sulfanilamide internally and neoprontosil instillations into the eye, along with surgical corrections of deformities of the eyelids, which, if permitted to persist, would probably defeat the ends of the plan.

From July 1, 1939, to June 30, 1941, the Department sponsored the treatment of 102 selected individuals, not all of whom had visually qualified for monthly blind assistance. Eleven gained vision of 20/40 or better; 13, of 20/70 to 20/40; and 17, of better than 20/200 to 20/70. Sixty-one had 20/200 or less vision at the conclusion of treatment; this high percentage of failures was accounted for by the persistence of complications and tissue changes already present in the eyeball or eyelids. However, with 41 persons visually improved, we are encouraged to continue to sponsor the treatment for applicants who come to the attention of the Department if there is any prospect of resulting vision exceeding 20/200. Incidentally, treatment is also supplied for persons with active trachoma to protect associates, even though there is no prospect of visual improvement, for the treatment seems to sterilize the infection that causes the disease. Exclusive of surgical attention the cost of completed treatments has averaged less than twenty dollars per patient.

Our greatest need is for an agency to sponsor treatment for the young age group not now eligible. With that advantage trachoma would eventually cease to be a problem in conservation of vision in Indiana.

Pterygium

Pterygium is a triangular, semi-fleshy, membranous growth that starts in the conjunctiva at the inner or nasal angle of the aperture between the eyelids and grows toward and onto the cornea; when it extends across in front of the pupil, light cannot enter the eye and blindness ensues. It is the policy of the Welfare Department to regard all pterygia as eventually blinding and to arrange treat-

ment to prevent blindness, even in cases where vision is still unimpaired. The treatment is surgical. No statistics are available because these patients are seldom heard from after enjoying the insurance of treatment.

Glasses

Glasses are furnished to all patients who have had extractions of cataracts by arrangements of the Department; they are also furnished to patients who have had extractions by private means or through other agencies if vision can be materially improved by new glasses; they are furnished to patients whose vision can be improved from 20/200 or less to better than 20/200, and to applicants when the medical examiner advises that further and progressive visual loss could be expected without them.

Other Treatment

General systemic or special attention, other than eye surgery, has been provided where related to the success of proposed eye treatment. Such medical care was given to 17 individuals and included dental hygiene and treatment for sinusitis, diabetes, high blood pressure, avitaminosis, and so forth.

Treatment was instituted in 925 persons, but discontinued in 78 instances because of a variety of circumstances, including deaths.

The Eye Treatment Program of the Indiana State Department of Public Welfare has been so successful and interesting that it will be continued and expanded wherever favorable opportunity presents.

Children's Services in Sight Conservation*

Laura E. Dester

DESCRIBES the role of the Child Welfare Division in Oklahoma in conserving the sight of the needy children in that State.

OKLAHOMA is a rural state, known as the "land of oil wells" and the "home of the Indians"—a land where men amassed fortunes and gave generously of their wealth, providing many institutions, but delegating their interest and the care of children to several state boards, commissions, and departments.

The Federal Social Security Act, with its provisions for federal grants to states for extending individualized services to children in rural areas, marked the beginning of a new era—a starting point for case work services to every child.

Just as our grandfathers and fathers pioneered in the development of an empire, so we have found ourselves making something of the same effort to interpret the meaning of case work and child welfare services. To give services to homeless, neglected, dependent children, and to children in danger of becoming delinquent, had little meaning in a rural state where services to children were defined by institutional care, widow's pensions, and relief from the county poor fund. Thus, in the early period of the development of a child welfare services program, it was necessary for the child welfare worker to find her place in the community picture. The worker has often been asked: "Where do you find children to work with? We have orphanages for the orphans, correctional schools for delinquents, ADC for the needy, schools for the deaf, schools for the blind, hospitals for the sick, and an institution for the feeble-minded. Now, just what is left for you to do?"

In a democracy such as ours it is generally accepted that the primary responsibility for the care and training of children rests

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with the family. The development of public schools, health agencies, and public playgrounds illustrates how families through the state have joined together to meet certain needs. In such a democracy the state has an obligation—to assure to all children an opportunity to utilize the services which have been established. In recognition of this obligation, it was a step forward when the United States Children's Bureau assisted all states in extending services in an attempt to meet the needs of every child. The programs of the 48 states and territories vary greatly. However, few will challenge the statement that child welfare services have had considerable leeway as compared with other programs of state departments. Child welfare divisions therefore have a responsibility as well as an opportunity to develop a program to meet the needs of the whole child and the needs of all children.

Fortunately, the Child Welfare Division in Oklahoma has state funds for resident children under twenty-one who are handicapped and who are in need of medical care; for services for the care of the homeless, neglected, dependent children; and for services for children in danger of becoming delinquent. Thus, there are more avenues open for providing the individualized services for children.

As child welfare workers went into areas in Oklahoma where case work services were unknown, only those cases were referred which had for many years been a problem to the community. The word "prevention" had no significance and the idea seemed fantastic. In one rural locality in Oklahoma a school child came to the attention of a very active Parent Teachers Association. This child appeared to be almost blind and, in their zeal to help, the Parent Teachers Association members advised the county judge to send this child without delay to the State School for the Blind. The county judge referred the case to the child welfare worker. Her first thought, of course, was an adequate examination by an ophthalmologist. The doctor found that the eye defect was due to malnutrition. His recommendation was merely provision of adequate diet.

This was a vivid lesson in interpretation, for this Parent Teachers Association group, who now assist in providing adequate diet, realize they might have condemned this child to a world of darkness. Now they see her as a happy, well-adjusted child who can take her place in the school and community.

Democratic forms of government need intelligent and adjusted persons. Children's agencies are challenged to utilize existing resources to develop healthy and adjusted citizens. No one will question that visual handicaps create specific emotional and vocational problems which make it difficult for the individual, thus handicapped, to become a participating citizen. If children's agencies accept the assertion that children's eyes are the most important single channel of learning, then children's agencies must know that they have a responsibility for active participation in sight conservation.

According to Dr. Motto,[1] "The social worker is an expert at solving and adjusting problems—and the success or failure of treatment may be dependent in large measure on her efforts." The function, therefore, of the child welfare worker is to interpret, to the parent and to the child, the problem and the need for adequate medical care, and to assist the family and the child in making emotional and economic adjustments.

The child welfare worker, in planning for the physically handicapped child, recognizes the skill of the medical social worker as one of her primary resources. In Oklahoma a "crippled" child is defined as a child having any malady which may lead to crippling. This includes eye conditions. A co-operative plan has been worked out between the medical social work staff of the Oklahoma Commission for Crippled Children and the child welfare staff. This plan makes it possible for the child welfare worker to have counsel and guidance in medical social problems, and it provides an opportunity for the medical social worker located in a medical center to utilize the services of the child welfare worker in the rural area in carrying out case work treatment. Even though transportation facilities are available, the distance from the home to the medical center often is so great that other services are needed. There are times when children from rural areas need to be in the medical center for outpatient treatment only. Plans for overnight care in a foster home may play an important part in the child's attitude toward the medical treatment. It is so important in these instances to have good foster care. Parents are much more likely to co-operate in the plan if the child welfare worker is able to assure them of adequate services.

Integration of social services is desirable—undoubtedly this must be the goal. Until such time as this goal is reached, the will to co-operate makes it possible to co-ordinate activities of the several agencies interested in child care, and good results can be obtained.

The child welfare worker, in her contacts with the home, the school, and the juvenile court, has an opportunity to locate many children with physical problems. For some time to come she cannot anticipate medical treatment facilities in the rural areas that are equal to those in the urban centers. She can, however, utilize resources within the state. This, then, is a real challenge to the medical social worker to give the child welfare worker the necessary help, not only in locating the child but also in carrying out the treatment when the child returns home.

Dr. Arno E. Town has said in a recent article[2]:

"A common preventable defect which has been brought to the attention of those working on the Selective Service Boards is the poor vision in one eye, due to squint or cross-eyes. Many of these men have been surgically treated, so that the appearance of the eyes is fine; but there has been no after-care or eye exercises which might have prevented the defective vision. . . . Here, then, is an entire field of sight conservation which has been neglected. A follow-up of these reports should be the endeavor of the social worker, working in association with the surgeon who operated on the cross-eyes. . . . We need more co-ordinated services which will unite the medical profession and all of the social agencies."

Here, again, is a recommendation which calls for more child welfare workers in the rural areas, more medical social workers in medical centers, and more staff meetings for joint planning, to assure better eye care for children.

It is not known how many cases of blindness might have been prevented if the visual handicaps had been located early and good medical treatment given. If such information were available, it would be the ophthalmologist who could give an interpretative analysis of the causes of blindness and methods of prevention. However, certain interesting observations with social work significance can be made.

The State Department of Public Welfare in Oklahoma, through the Division of Public Assistance, administers the program of Aid to the Blind. There are 2,146 recipients of Aid to the Blind in the

State. In this group, the five principal causes of blindness are: trachoma, 23 per cent; cataract, 18 per cent; optic atrophy, 14 per cent; uveal disease, 13 per cent; and keratitis, 12 per cent. It is not known what proportion of this group would have responded to treatment if located early in the illness. Certainly with principal causes, such as trachoma and other infectious diseases, it is assumed that sight could have been conserved for a considerable number. According to the records in the State Department of Public Welfare, 581 (or over 25 per cent) of these recipients state that their blindness occurred before they were twenty years old. These figures alone indicate the need for services.

But this is not the whole picture in Oklahoma. A recent account[3] of the present population of the School for the Blind states:

"Among the 141 students in the State School, accidents of various kinds are responsible for 16.3 per cent of the conditions which brought these children to blindness or near-blindness. . . . Of another large group among the 141 students in the School, 14.9 per cent had congenital cataract. Since the cause is as yet unknown, prevention is difficult, but restoration of sight is often possible.

"These children illustrate the need for adequate resources for skilled medical care in early childhood. This is the moment when relatively simple modern surgical treatment can often enable these children to see well after they have been fitted with glasses. Social workers going into families need to use the most effective persuasion in getting the parents to take these children either to skilled eye physicians or to the Crippled Children's Commission for care in babyhood or early childhood. Children with congenital cataract, treated in very early childhood, thus begin their learning processes with the full battery of senses. Child psychologists tell us this is important, for basic reactions developed then are difficult to change. Also, the mechanism of sight may deteriorate so that operation at a later age may not bring as good results as might have been expected.

"For these twenty-one children modern surgery could probably have prevented blindness had these children been placed under care early enough. Thus, adding 41 cases of blindness from communicable diseases, 23 from trauma, and 21 from congenital cataract, it is evident that 60 per cent of the blindness of the children in the School for the Blind was unnecessary."

To a child welfare worker these figures suggest that communities need to be made aware of the necessity of education along pre-

ventive lines and of providing better medical facilities and better use of existing facilities.

One day, while visiting a rural school, the child welfare worker noticed a little boy in the rear of the classroom who was wearing a patch over his right eye. She questioned the teacher regarding his difficulty. The teacher said she really did not know what was the matter with his eye. She said that Bobby had been wearing the patch for about a year and that she and the children were so accustomed to seeing it that they just never mentioned it to him. The worker learned from Bobby's family that they were distressed when the boy first injured his eye, but that they had not taken him to the doctor because the pain had subsided within a few days. The family readily consented to the worker's suggestion that Bobby be seen by a physician. When the boy was taken to the eye specialist his lids were so securely locked together it was necessary for the doctor to anesthetize the whole area before he could even look at the eye.

Medical treatment was provided and perhaps no permanent eye damage has occurred. However, think of the effect this injury and its neglect may have had upon the boy's personality development!

The Child Welfare Division received a telegram from a county juvenile judge in a remote section of the state which gave the following information: "Have an eight-year-old abandoned child with trachoma in county jail. None of the children's institutions will accept him because of infection. Will you please take the child?" Emergency plans for this youngster were comparatively simple. He was placed in a foster home. The foster mother had previous experience in caring for children with trachoma, and the home was located in a town in which the services of an ophthalmologist were available. The ophthalmologist's diagnosis revealed other eye difficulties but no trachoma. This child needed medical supervision, it is true, but he also needed a home. After treatment was completed, plans were made for permanent placement in a substitute home.

These illustrations give evidence of active participation by the child welfare worker in sight conservation, even in a state which has delegated its child care responsibilities to some eight state departments. These services could be much more effective if responsibility for child care were centered in one children's division, with control and supervision of admissions to children's institutions

as one of its functions. Experience in children's work proves that not all children needing care away from their own homes adjust to institutional life. Is it not fallacious to assume that all children with a visual handicap should be in an institution? What, then, is the answer? Integration of children's services—agencies equipped to provide services in the child's own home, in a foster home, or in an institution—with good medical facilities available in all instances.

This places upon the child welfare worker an obligation to create an interest in better facilities for the care and treatment of the handicapped child. What are her specific methods and skills utilized in this phase of child care? The child welfare worker in her daily contacts with children is sensitive to their needs, and in her close observation of their behavior is able to locate possible causes of difficulties. Her ability to use actual examples of child neglect as a means for interpretation to the community, plus her knowledge of community facilities for treatment or lack of such facilities, enables her to see the whole picture. The child welfare worker can and must be able to contribute to the sight conservation program. This can be accomplished by:

1. Her case work with children, their families and their foster parents.
2. Her contacts with children's institutions.
3. Her contacts with school teachers and school administrators.
4. Her contacts with physicians and public health officials.
5. Her contacts with workers in public assistance agencies.
6. Her work with child welfare service advisory committee members.
7. Her participation in meetings of church and civic groups.

The following illustrates a single case which involved services with a child, with the foster parents, the school, the physician, advisory committee members—and was later used by the worker in interpretation to civic groups.

Bart was seven. His school teacher told the child welfare worker he had trachoma, and was getting no treatment. She described his family as chronic dependents, a family who were hopeless and who could not make good use of any help given them.

The worker found a father whose blindness had in part contributed to the dependency of the family—a young stepmother,

uneducated and unprepared to assume the responsibility of caring for Bart and his two older brothers—and living conditions that were deplorable.

An eye specialist was willing to help. He said treatment must be instituted immediately. Because of the inadequacy of Bart's own home and because of the time element, this child was moved to the home of his maternal grandparents, while efforts were being made to make his own home more sanitary and livable.

Bart had a somewhat dependent attitude. He implied in various ways that "the world owed him a living." Bart was welcome in the grandparents' home, and they tried hard to carry out all suggestions for the child's good. Treatment of the eye condition was painful. He had to be constantly encouraged to continue. While the doctor was responsible for treating the eyes, the worker was responsible for the child as a whole, and his adjustment to his family and to society. Lately the teacher has commented not only upon Bart's progress in school work, but also upon the good attitude he is developing. The community is becoming aware that improvement in the family situation is being made—slowly, it is true, but nevertheless, improvement.

The fact that this visually handicapped child and his family were given services furthered child welfare and strengthened the entire children's program in this community.

To those who deal with children's problems, sensitivity is an essential quality. Successful workers do not depend upon referrals alone, as too frequently the seriousness of a handicap is not understood. Recently a woman came to the office of the child welfare worker to ask assistance with a problem. She was accompanied by a neighbor and the neighbor's small son. The specific problem for which help was requested was discussed before the worker turned her attention to the neighbor's child, who obviously needed her help, for it was noticeable that the child had difficulty in seeing. The mother explained that this was their only child and that her husband was so "wrapped up" in the child that he had steadfastly refused to have him seen by a physician for fear an operation would be recommended. The operation would mean temporary removal of the child from his home—and in the father's mind, there was the genuine fear that the end result might be disastrous. To remove this fear and anxiety will require skill, patience, and understanding.

It is not known to what extent anxiety and fear of medical care

are factors in causing blindness. It is interesting to note that, of the 2,146 recipients of Aid to the Blind known to the State Department of Public Welfare in Oklahoma, recommendation for treatment was made for 535, or almost 25 per cent. Follow-up work has not been attempted on all cases, but of those seen one-third have refused treatment. It is hoped that through individual interpretation and counselling this figure can be greatly reduced.

In conclusion we might summarize the ways in which a children's worker may contribute to sight conservation. She may contribute by:

1. Recognizing eye and general health problems among children under care.
2. Obtaining all necessary medical care to insure good vision in terms of modern medical science.
3. Strengthening nutrition work and weaving it into case work in terms of adequate and balanced diet for all families under care.
4. Visiting schools for the blind, observing the children, and, where necessary, giving the school authorities all possible assistance in providing medical or surgical care.
5. Encouraging educational authorities to make possible facilities for all handicapped children, according to their special needs.
6. Interpreting to civic groups the contribution they can make in preventive work.
7. Promoting public understanding of the distinctive needs of the partially seeing.
8. Assisting in developing careful, selective processes for the admission of children to all state institutions.

As long as children's divisions of state departments of public welfare have the responsibility of giving services to neglected and dependent children, they have a major responsibility in removing causes of neglect and dependency. May those of us actively engaged in children's work have the courage, the vision, and the foresight to accept our place in creating public understanding and public support for those services which conserve the sight of our youth.

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Ophthalmia Neonatorum

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THE author emphasizes the need for continuing the drive on ophthalmia neonatorum.

THOUGH more than half a century has passed since Credé offered the solution to the problem of ophthalmia neonatorum, this disease is still a common occurrence. Hundreds of infants are blinded in one eye and approximately one hundred children enter schools for the totally blind every year in the United States alone as a result of this preventable disease of the eyes. Why should this be so?

The motto of the Department of Health of New York State reads, "Public health is purchasable and within certain limits a community can determine its own death rate." What are these certain limits? An exhaustive study of the problem of ophthalmia neonatorum reveals them clearly, as far as this disease is concerned. The failure results not from lack of knowledge: the failure lies in not precisely applying the positive knowledge we have.

Experience clearly indicates that the discovery of an absolute preventive or cure for a disease does not mean that this disease is done for, as far as the human race is concerned. What better example could be offered than that of Jenner and smallpox. Almost a hundred years before Credé, the country doctor, Edward Jenner, told the world, at least the Occidental part of it, how to prevent the dread disease, smallpox. And 150 years later, what do we find—smallpox endemic throughout the civilized United States. Why? Is it because vaccination is not effective? Most certainly not. It is because vaccination is *too* effective. The wholesale suffering, disfigurement, and death resulting from smallpox have been abolished from man's memory and man's children. The ignorant and the "crackpot" refuse vaccination. Stringent laws are necessary to

force the delinquents to protect themselves. But laws have never completely solved any problem. Morals cannot be legislated in and disease likewise cannot be legislated out. Education and co-operation are necessary adjutants.

Incidence of Ophthalmia Neonatorum

The term ophthalmia neonatorum includes both gonococcal and non-gonococcal inflammations. Of all these, only the gonococcal infections are a real threat to vision. The others, with the very rarest exception of a severe streptococcal infection, are bothersome but not so serious, and really should not be classified under this name. The difference between a gonococcal and non-gonococcal eye infection in the newborn is usually so great, both in clinical course and prognosis, that the same general name is misleading. Inclusion blennorrhea of the newborn, a virus disease, never a threat to vision, alone seems to have attained its own distinctive name, but even here there is a tendency to include it under the general group.

The reported incidence of gonococcal ophthalmia neonatorum varies widely. This variation is due to many factors. The laws of most states and foreign nations are individual and likewise the enforcement of them depends to a large extent on local custom and opinion. Thus eight states and four Canadian provinces in which 196,748 births occurred reported no cases of ophthalmia in 1939, while Ohio, with five per cent of the population of the United States, accounted for 23 per cent of the fully recorded cases. Even the reported cases are no true indication of the incidence of this disease. Lowenstein, in a study of the records of 37 New York City hospitals from 1931 to 1936, showed that while only 23 cases had previously been reported to the Department of Health during this time, the records revealed 1,344 cases among 192,478 births (31 per cent total New York City births, 1931 to 1936); out of these, 141 were of gonorrheal origin. The only conclusion that can be drawn from the findings is that gonorrheal ophthalmia neonatorum is still a common disease.

Present Study

In the past 12 years there have been over 27,000 births at the Sloane Hospital for Women at the Columbia Presbyterian Medical

Center. During this time the technique of a modified Credé method of prophylaxis has been changed once. In the first period of 8 years, one per cent silver nitrate was dropped into the eyes of the infant by one attendant while the other held open the lids, using both hands, one to lower the lower lid and the other to raise the upper, a piece of gauze assisting on each lid. No previous irrigation or wiping the lids with a moistened sponge was done. A few seconds after silver nitrate had been instilled it was irrigated out with normal saline solution. During these 8 years there were 17,000 births. In the next four years exactly the same technique was carried out except that the saline irrigation of the silver nitrate solution was omitted. There were 10,000 births in this period. This change in method was decided upon because two cases of gonorrheal ophthalmia occurred almost simultaneously in August, 1936.

The births are divided into approximately 40 per cent private and 60 per cent ward. Of the ward cases, 20 per cent are colored, a rather high percentage. All the cases of gonorrheal ophthalmia neonatorum developed in the ward cases. Not a single baby developed gonorrheal ophthalmia in over 10,000 private deliveries. One private case which was delivered in a hotel and subsequently brought to the medical center came down with gonorrheal ophthalmia neonatorum! In the first period, 1929 to 1936, there were 16,922 births, with 11 cases of gonorrheal ophthalmia neonatorum. In the second period, during which time the silver nitrate was not irrigated out with normal saline, there were 10,248 births and only one case of gonorrheal ophthalmia neonatorum.

Gonorrhea in Pregnancy

Bernstein and Montgomery, in investigations at the outpatient department of the Jefferson Medical College, found about 7 per cent of pregnant women had gonorrhea. They state that other authors have found gonorrhea in from 18 to 50 per cent of pregnant mothers. That the incidence is higher than bacteriological findings indicate it to be is clear from repeated negative smears in many cases of known gonorrhea in women. One of the most important clinical characteristics of the gonococcus is its power of latency (Table I).

TABLE I.—INCIDENCE OF GONORRHEAL OPHTHALMIA NEONATORUM IN 27,000 BIRTHS, WARD AND PRIVATE

According to Different Silver Nitrate Techniques

Silver Nitrate, 1 Per Cent, Followed by Normal Saline Irrigation 1929–1936		*Silver Nitrate, 1 Per Cent Alone 1936–1940*	
Births	*Cases of Gonococcal Ophthalmia*	*Births*	*Cases of Gonococcal Ophthalmia*
16,922	11 1 in 1,538	10,248	1 1 in 10,248

TABLE II.—INCIDENCE OF OPHTHALMIA NEONATORUM

November 1, 1936–October 31, 1940

Ward Births Only

	Number	*Per Cent*
Inclusion blennorrhea	32	34.0
Staphylococcus aureus	29	30.8
Pneumococcus	1	1.06
Haemophilus influenzae	2	2.12
Staphylococcus aureus and Aerobacter aerogenes	1	1.06
Neisseria gonorrhoeae	1	1.06
Negative (normal flora)	9	9.6
Lacrimal conjunctivitis (congenital stenosis)		
Staphylococcus aureus	5	5.3
Haemophilus influenzae	2	2.12
Streptococcus viridans	2	2.12
Diplococcus pneumoniae and Haemophilus influenzae	5	5.3
Streptococcus viridans and Haemophilus influenzae	1	1.06
Neisseria catarrhalis	1	1.06
B. hemolytic streptococcus	1	1.06
B. hemolytic streptococcus, Streptococcus viridans, Staphylococcus aureus	1	1.06
Negative (normal flora)	1	1.06
Total	94	..
Incidence of all ophthalmia in 6,289 ward births		1.49
Incidence of gonococcal ophthalmia in 6,289 ward births		.016

That the technique of prophylaxis is highly important will be seen from the preceding table. The incidence of gonorrheal ophthalmia neonatorum is many times higher when the silver nitrate solution is washed out than when it is allowed to remain. To be effective, silver nitrate must reach the conjunctival sac and be allowed to exert its great potency against the gonococcus. It does no good if it is dropped somewhere near the lids or even on the lids. The statement, "Credé drops used," often protects the user (legally) more than the infant. One has only to watch the unskilled try to place drops in the newborn's eyes to appreciate this. It is a two-man job, both because of the difficulty and as a double check for responsibility. At Medical Center it has always been assigned to two persons to do.

The question of the effectiveness of other silver preparations is often raised. Proponents of silver acetate and argyrol argue that because these preparations cannot be made up in concentrations injurious to the newborn infant's eyes they are safer and, being silver salts, just as effective. It is a recognized fact that the gonococcus is very susceptible to silver preparations. However, the advocates of these other methods have not as yet brought out figures to match those of silver nitrate. Hartman reported the use of silver acetate in 3,615 hospital deliveries, following which 3 cases of gonorrheal ophthalmia neonatorum developed. This is almost six times higher than our latest figures.

Convincing figures for argyrol were not found.

The burden of proof is not on silver nitrate as the best preventive of ophthalmia neonatorum, but rather on its numerous substitutes.

Conclusion

The only conclusion seems to be that we have now and have had for 70 years the most effective kind of weapon against gonorrheal ophthalmia neonatorum. We must learn, however, that this simple weapon must be used with exacting care and aimed most accurately. There is more to shooting a gun than just pulling the trigger.

Demonstrations of Medical Social Work in Eye Clinics

Elizabeth G. Gardiner

DESCRIBES ten years of medical social work in eye services as promoted by the National Society for the Prevention of Blindness in a series of demonstrations.

FOR more than ten years the National Society for the Prevention of Blindness has carried on demonstrations of medical social work in eye services as a means of conserving the sight of patients. Placing a fully prepared medical social worker with a knowledge of eye health in eye clinics was one answer to the startling findings of the Dispensary Development Committee, which showed a high proportion of patients suffering from serious eye pathology likely to lead to blindness who did not return to carry out treatment.[1,2] Assuming the situation found in New York and Philadelphia existed elsewhere, the Society wanted to develop a wider use of a means of case holding proved effective in meeting the same problem in other clinic services and at the Massachusetts Eye and Ear Infirmary.[3] General conditions were constantly changing during the period of the demonstrations, ranging through the depths of the depression, the economic recovery and into the accelerated economic and educational tempo of the first months of World War II. Basic social philosophy has also changed with the acceptance of the Social Security and the Selective Service Acts. Both of these have shown great gaps in the nation's health services. Medical resources for treating early stages of eye difficulties are inadequate even in large cities and are so unevenly distributed throughout the country that many patients with simple remediable conditions like pterygium, ptosis of the lids, and cataracts are not being restored to the sighted world.[4] Among

the young men examined for the armed forces, a large part of the rejections for loss of sight in one eye could have been prevented if these men had been retrained to see with both eyes, in addition to receiving other treatment.[5] The effectiveness of many eye services is as questionable today as it was twenty years ago.[5] Unless there are adequate social services integrated with medical care, patients still discontinue clinic visits before treatment is completed.[6, 7, 8]

Have the demonstrations failed, or have there been too few of them, or has there been too little description of the results? These questions and many others naturally arise. An attempt to answer them now from the Society's experience with the demonstrations carried on from December, 1931, to June, 1942, is timely because war pressures may change or exaggerate trends already evident.

Plan

The general plan has been for the hospital wanting to try out medical social work as an integral part of clinical ophthalmology to request the Society to prepare a worker and to request financial assistance in paying the salary of the worker for a period of one to three years. The exact proportion of salary carried by the hospital and by the Society has varied. The general principle has been that the Society would pay half or less than half of the total salary for the whole demonstration period. The Society tapers off its share as the demonstration advances, and the value of the demonstration becomes evident. A written contract is signed by the chief ophthalmologist, administrative directors of the hospital and of the social service department, on the one hand, and, on the other hand, by the Executive Director of the Society after review by the Executive Committee. The hospital agrees to continue the plan at its own expense if the demonstration is satisfactory. A contract originally drawn for a year might be subject to renewal for a second year. This general plan has become known among medical social workers, ophthalmologists and hospital administrators. The most desirable requests for demonstrations have come at certain moments of growth in the medical schools, when a whole reorganization called for broad thinking and planning as well as for a high quality of ophthalmological practice, including full after-care for patients.

The medical social worker with special training in eye health

problems and an understanding of modern treatment plans, as well as the social implications of both, was expected to give full time to helping the eye patients to face their problems and to work out a practical way of meeting the difficulties. Through interviews with the patients and relatives in the clinic, the hospital or the home, this social worker was to reenforce the interpretation the ophthalmologist had given regarding the patient's condition and gather the social data necessary to helping the patient solve his problems. Through sympathetic listening to the patient's questions and his point of view, the obstacles to his acceptance of the treatment plan would be found and if possible removed. Thus the general principles of medical social study and treatment were to be applied early enough in the eye condition to give the ophthalmologists the best possible opportunity to conserve the vision. The understanding of the patient's attitudes was recognized as essential to his receiving the fullest benefit from modern medical science. A part of the skill expected of the worker was an ability to integrate her work with that of the ophthalmologist to achieve their common purpose of helping the patient. The keeping of suitable social records and making reports were necessary parts of a high quality of work.

The details of the plan have varied in the different centers according to particular features of the hospital, but the essentials have continued as their soundness became evident. Frequently certain groups of patients have been referred to the social worker as a part of the routine clinic procedure; then, in addition, the doctors were urged to refer individuals who seemed to need social guidance. Among the former groups were likely to be patients referred from the clinic to the ward with a recommendation for operation—a function of the social worker is to help the patient face his own fears of surgery. In the earlier demonstrations, all patients whose condition was due to syphilis or to glaucoma were interviewed at the time the diagnosis was made, to enable the worker to estimate the need for intensive social treatment.[5] Syphilis and glaucoma are examples of several serious pathological conditions likely to lead to blindness if treatment is neglected. In the later centers, patients with these conditions and, in addition, any child with a condition likely to lead to impairment of vision, such as crossed eyes, are

especially considered. The experience of the demonstration centers in relation to these groups of patients has influenced planning in hospitals where no demonstration was located and has also influenced state-wide programs in regions as far apart as Louisiana and Maine.

The Demonstrations

In all, eight demonstrations have been undertaken, and two of these are continuing for another year. The first demonstration was undertaken in December, 1931, immediately following the first special course offered as a joint undertaking of the Massachusetts Eye and Ear Infirmary and the Society. The preparatory courses will be described later under a separate heading. Sometimes only one demonstration has been in progress; again, as many as three have been under way at one time. The demonstrations have varied in length from 1 to 3 years, the wartime uncertainties being responsible for the only one-year plan. All of the hospitals are teaching centers connected with university medical schools and five of the eight are connected with schools of social work. Two of those not yet affiliated with such schools may be drawn in at some future date. Half of the hospitals are under public auspices, one municipal and three state. Half are under voluntary auspices. The eight demonstrations were made in six states: two on the east coast and the other six in the Mississippi basin, scattered from Denver on the west to New Orleans on the south.

Seven of the eight demonstrations were in general hospitals. This fact may be related to the success of the demonstrations, for seven of the eight are classed as successful and only the one launched in a separate specialized hospital is considered unsuccessful. Certain characteristics of the seven general hospitals were important in the success of the demonstration. The most conspicuous of these is the high degree of development of medical social work under the guidance of an able director in many services. Other factors were undoubtedly present, such as the ophthalmologist's imaginative understanding of the patient as a person and the hospital administrator's desire to develop the best modern techniques in all services.

A general criterion utilized in evaluating demonstrations is the

continuation of the general plan of work evolved during the demonstration period, after the Society's financial support is over. Another index of success is the request from the centers to have special preparation given to a new staff member when the first one is promoted to a more responsible position. Requests for a demonstration or a specially trained worker in a hospital near one of the demonstrations is still another way of evaluating the results of a project. Two and often three of these indexes have been found in seven of the eight demonstrations.

Different and far-reaching developments in three of the earlier centers have also been important indications of the usefulness of the demonstration. The Washington University Clinic's demonstration, started in February, 1932, has developed into a teaching center for preparing new workers for eye services. This was possible because of the high quality of teaching in both the medical school and the school of social work, and because of the close working relationship between the two professional schools. In the two widely separated states of Louisiana and Colorado the demonstrations, started in 1932 and 1934 respectively, have deeply influenced the public provision of medical care for indigent eye patients under several provisions of the Social Security Act. Louisiana has emphasized restoration of sight for the needy blind, while Colorado is providing care for the eyes of children in rural areas. The influence of these demonstration centers travels in ever-widening circles as the workers are promoted to positions in new state programs—for instance, when a worker from the demonstration in Denver, Colorado, is appointed to the staff of the Maine State Department of Health and Welfare. The demand for skilled leadership in the last-named state was developed through preliminary surveys showing the problems, and not through a demonstration.

It is, of course, easier to evaluate the effectiveness of the earlier demonstrations than the more recent ones; these far-reaching results described above are a growth of over 8 years. The demonstrations started within the past two years are successful in providing skilled services to the patients, services which the ophthalmologists welcome as a part of the medical care of the patients. This much is shown by the ophthalmologists' requests to continue

the services. It is hoped that the early signs of wider influence now evident will not be cut off by the war pressures.

Courses

Much of the success in both the earlier and the later demonstrations is due to the careful preparation of selected personnel. Therefore a description of the special courses is presented.

In order to prepare skilled personnel for the eight demonstrations, a set of special courses has been developed and offered fifteen times to a total of 44 students. At first, a three months' course was given at the Massachusetts Eye and Ear Infirmary, where students without a bachelor's degree were accepted. Later, as the basic educational requirements for medical social workers were raised and other factors changed, the course was given at Washington University, St. Louis. The course was offered four times for 12 students in Boston, and eleven times for 32 students in St. Louis, beginning in 1933. Frequently the hospital requesting a fully prepared worker released someone already on its social service staff to take the advanced training; sometimes a new person acceptable to the agency, the University and the Society was sought. A summary of the general plan of the course as it has been for the past few years is as follows, although this plan is subject to change as circumstances and experience dictate.

SPECIAL COURSE FOR THE PREPARATION OF MEDICAL SOCIAL WORKERS FOR EYE SERVICES

Prerequisites:
(1) A bachelor's degree from a recognized college
(2) A full course in a recognized school of social work, including medical social work
(3) Some experience, preferably in a general service, such as pediatrics

Credentials:
(1) Write to the National Society for the Prevention of Blindness for application blank
(2) When this has been accepted, send transcripts of previous education, both undergraduate and graduate, to Miss Ruth Lewis, George Warren Brown Department of Social Work, Washington University, St. Louis, Mo.

Content of Course: Four units of study can be undertaken:

(1) Required:

(a) Ophthalmological information taught by a member of the ophthalmological faculty of Washington University Medical School. Lectures and observation

(b) Social aspects of eye conditions taught by Miss Ruth Lewis

(c) Supervised medical social case practice in eye service of a hospital

(2) Elective:

A subject selected by the student with the consent of Miss Lewis, *e. g.*, community organization, psychiatric problems, public welfare administration

Credit: The usual university credits are given after the satisfactory completion of the examinations and other requirements

Limit: Four students

The number of students had to be limited to four because field work placements for more were not available. This supervised medical social practice and the thoroughness of the three supporting classroom courses requiring the full time of the student for an academic semester have been the chief differences between this method of preparation and other courses offered in several localities from time to time.

Of the 44 students, 11 were prepared for the demonstration centers; the others were accepted either at the request of a hospital or agency wanting to add skilled personnel, or occasionally at the students' own request, in the hope of finding openings later on in an eye service. Thirty-eight of the 44 entered eye services on completion of the course or a few months later. The geographical distribution of these students, as shown in Table I, is much wider than the distribution of the demonstrations. These 17 areas should be contrasted with the six states where the demonstration centers were located—thus the idea of employing workers really familiar with eye health has spread way beyond the immediate areas of the demonstrations and, in June, 1942, includes the northern and southern extremes of the eastern seaboard as well as Los Angeles

and Hawaii on the west. This geographical distribution tends to widen as time goes on.

TABLE I.—TYPE OF PLACEMENT AND GEOGRAPHICAL DISTRIBUTION OF FORTY-FOUR SPECIAL COURSE STUDENTS

Location	*Number of Students*			
	First Placement		*June, 1942*	
	Eye Service	*Other*	*Eye Service*	*Other*
California	1	..	..	3
Colorado	3	..	..	1
District of Columbia	..	..	..	3
Florida	..	..	1	..
Hawaii	1	..	1	..
Illinois	4	..	2	3
Kansas	2	1	1	2
Kentucky	1	..	..	..
Louisiana	4	..	1	1
Maine	..	..	1	..
Massachusetts	1	..	1	..
Missouri	3	..	1	1
New York	3	2	..	4
Ohio	1	..	..	3
Oklahoma	1	..	1	..
Pennsylvania	11	..	7	1
South Carolina	1	1	1	1
Many states	1	1	..	2
Japan	..	1	..	1
Total	38	6	18	26

Of the 38 students who entered eye services on completion of their courses, only 18 were found to be still in eye services at the end of the review period. At first sight the shift of many of these workers from positions in eye services into more general positions may appear to be a loss, but the subdivision of the kinds of position held (see Table II) shows that as directors or supervisors of depart-

ments of social service, as teachers of medical social service in schools of social work, these people can and do spread an understanding of eye problems. Thus the loss in one respect is a gain in another. These promotions to positions of wider responsibility were inevitable for people of ability. The most striking change in recent years is the considerable proportion of the students who are in community programs—ten in eye health programs and six in more general programs, such as maternal and child health, venereal disease control, or medical care for public assistance categories where the specialized knowledge is genuinely valuable. This shift also often represents promotions in both salary and responsibility, for many workers are in state-wide programs. Among the present occupations listed in Table II under "other hospital services" are

TABLE II.—PRESENT OCCUPATION OF 44 STUDENTS, JUNE, 1942

Eye (a) clinics	8
(b) programs	10
Directors of Social Service Departments and Supervisors	3
Other services in hospitals	5
Teaching social work	3
Programs, not eyes	6
Married, not working	5
Not known or studying	4
Total	44

two workers who are now with the Red Cross in Army or Navy hospitals. Further development of both the trend toward program positions and service hospitals may be expected to continue. On the other hand, the tendency of the married women to stop work may be reversed, especially among those whose children are old enough to go to school. It is to be hoped they may return to eye clinics, for the development of programs emphasizes the need for medical social service within the medical institutions if the best results are to be obtained. The complementary nature of the functions of the workers in the two types of agencies can not be described here but is clearly recognized. The general demand for fully prepared medical social workers has undoubtedly been stimulated by the 1940 merit system amendment to the Social Security Act, which also gives enough security of tenure in public

programs to attract a finer type person than the politically appointive positions could command.

Discussion

Returning to the basic questions of whether the demonstrations have accomplished a useful purpose, the definite answer is that the results have been even better and broader than was anticipated when the plan was initiated in 1931. The exact results of the demonstrations have been hard to measure for lack of statistical surveys of the situation prior to starting the demonstration and again as it draws to a close. Such surveys take much time and are usually considered luxuries. They are, however, the only source of objective data and should be encouraged. The eight demonstrations in six states have led to the distribution of about 40 skilled workers in 17 states functioning both in clinics and in community programs. This is a good beginning and one from which further growth may be expected as more descriptions of the value of integrating the medical and social techniques are published. The literature on the subject of eye patients has already been considerably enriched by the graduates of the course and further contributions may be expected.

The selection and preparation of personnel is the foundation of success in these projects, as in most others. Any plan for future developments must include provision for adequately preparing personnel, since the insistence on a high quality of worker has been one of the most constructive elements in the plan. The recent expansion of state merit systems as a means of selecting personnel to carry out the provision of the state and federal laws, including those bearing on restoration of sight and prevention of blindness, has brought about a highly desirable rise in the personnel standards. These services authorized by law will be carried on in some way. The continuing of courses is a valuable way of insuring future personnel for effective service.

There have not yet been enough demonstrations nor is ten years a long enough time in which to launch a new type of enterprise in the conservative ophthalmological world. Wider discussion of the projects and wider geographical distribution of the demonstrations

will help to bring growth in regions where rounded provision for care of the eye patient is still a matter of future development.

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News of State Activities

THIS Section is devoted to the reporting of sight conservation activities carried on by official and voluntary agencies throughout the country. It presents information supplied by these groups, and serves as a medium for exchange of experiences. Only brief and timely items can be used, because of the limitations of space.

Conservation of Vision Committees of State Medical Societies

When the National Society for the Prevention of Blindness inaugurated its "*News of State Activities*," it planned to incorporate not only news from voluntary and official prevention of blindness organizations, but reports from state medical societies which had, as part of their programs, the conservation of vision. With the exception of two or three state medical societies, however, there has been very little reporting. It is hoped, following the luncheon conference arranged by the Society for chairmen of state conservation of vision committees, the American Medical Association Committee on Conservation of Vision and Prevention of Blindness, and officers of the Section on Ophthalmology during the American Medical Association convention in Atlantic City, that future issues of the REVIEW will receive more frequent news from more state committees. Following is a brief report of the conference which took place in Atlantic City, under the chairmanship of Dr. S. Judd Beach:

The chairmen of seven state committees, three representatives of the American Medical Association Committee on Conservation of Vision, an officer of the Section on Ophthalmology, seven Society representatives, including three Board members and a member of the Advisory Committee, and one representative each of Brazil and Puerto Rico, participated. Dr. Harry Gradle, the new permanent Chairman of the American Medical Association Committee on Con-

servation of Vision, in discussing plans of the Committee, stated that he felt that every state medical society should appoint a conservation of vision committee and that these committees should study the specific prevention of blindness problems in their state. He enumerated the differences in these problems according to locality; for example, trachoma areas, industrial regions, and agricultural regions. In his opinion legislative problems were primarily the responsibility of the lay organizations and not the medical committees.

Dr. Gradle described the physical examination record booklet which is used in South American countries. Every school child receives a booklet when he enters school, and the school has a duplicate on file. This record is added to at each examination and is consulted by physicians outside the school if they are called for medical attention at any time. A similar system, Dr. Gradle felt, might be introduced by conservation of vision committees to the local health departments as a method of providing a check-up on the eyes of the children in the United States.

In closing, Dr. Gradle indicated that the conservation of vision committee of the medical society of each state will be asked to prepare a report for the next American Medical Association meeting, and a special conference of this group will be planned.

Following are listed briefly the thoughts expressed by the representatives of state committees:

Connecticut.—Dr. Herman Little, representing Dr. Eugene Blake, Chairman, mentioned that this Committee was only recently established. Plans for the future included the request for a speaker from the National Society for the Prevention of Blindness to address the fall meeting of the Connecticut Eye, Ear, Nose and Throat Society.

Indiana.—Dr. J. Cassady, representing Dr. Robert Masters, new Chairman of the Committee, indicated that his Committee had been influential in obtaining legislation controlling the sale and use of fireworks, requiring pre-marital examination and medical examination of all food handlers (mainly for venereal diseases). The present plans of the Committee include a campaign for educating the general practitioner in the early recognition of glaucoma. The Committee works closely with the Departments of Health and of Welfare.

Missouri.—Representing the Missouri Committee, Dr. Winfred Post reported that the control of glaucoma has been the main theme of its program. A comprehensive exhibit on the subject of glaucoma had been prepared and was being used at state and county fairs and at meetings of local medical groups—thereby reaching a great many general practitioners.

New Jersey.—Dr. Elbert Sherman, representing the New Jersey Committee, mentioned the subject of prevention of industrial eye injuries as the main problem which his Committee hopes to investigate.

Pennsylvania.—Dr. Thomas Gagion reported that his Committee has attempted to get the co-operation of county medical societies to carry out their campaign for educating the medical profession in the control of ophthalmia neonatorum, proper training for children with squint and early recognition of glaucoma. He stated that his Committee will endorse a revision of the Pennsylvania ophthalmia neonatorum law which will state that silver nitrate must be used within "4 hours after birth" instead of "soon after birth." In this connection he mentioned that these laws should be strengthened by including specific fines and penalties if provisions were not carried out. He frankly disagreed with Dr. Gradle concerning the medical profession backing certain legislation. He said that in these medical problems it was necessary for the doctors to safeguard the public against inadequate legislation. The Pennsylvania Association cooperates fully with this Committee and has repeatedly asked the Committee to act in an advisory capacity.

It is hoped that the Society may through this column present progress not only from the states mentioned above but any others in which conservation of vision committees are active.

* * *

Connecticut

"The Connecticut Board of Education of the Blind has expended the past year for its prevention of blindness activities $2,853.50. Of this amount, $968.50 was expended for ophthalmological examinations; $867.65 for corrective surgical or medical treatment; $778.85 for glasses; and $238.50 for other services. Under the item of other services are included conservation of vision advice, large type books, readers, special diet, giant typewriters and transportation.

"The number of individuals who received ophthalmological examinations was 192, of whom ninety-eight were children. There

were thirty-five individuals who were given corrective surgical or medical treatment, of whom eight were children. One hundred fourteen individuals were furnished with glasses, of whom sixty-six were children. Social case work involving the prevention of blindness activities of the Board was extended to 419 persons, of whom 246 were children. Of the sum expended for glasses ($778.85), $563.75 was for serious eye defects. The Board of Education of the Blind employs a graduate nurse as mother's counsellor who devotes a major portion of her time to the conservation of vision and prevention of blindness activities of the Board."

—Board of Education of the Blind, Hartford, Connecticut

District of Columbia

"That good lighting is more than a matter of electricity may be effectively suggested through a simple, home-made exhibit.

"We constructed two little living rooms by covering cartons, one with brown wrapping paper and the other with light-colored wallpaper. In the latter we used pale blue and yellow doll-house furniture, yellow curtains, a light-colored rug, and a number of toy lamps, properly placed. The top of the box was wired for a 7½ watt bulb.

" 'Real people' dolls, made of rubber, make the room more interesting. We added a child in a yellow suit and a woman in a light dress who sits under a lamp holding a book up in the approved manner. This carton is labeled the 'Goodlight Family.'

"The dark room we call the 'Poorsight Family.' Their furniture is brown and green, their draperies dark, their rug has a black background, and although the furnishings are as tasteful and well made as those in the contrasting room, an air of gloom abounds. A man in a black suit stands by the dark window and a girl in a navy blue dress reads comics on the floor. Two small flashlights represent inadequate lamps in the corners of the room.

"Explanatory placards may be added."

—District of Columbia Society for the Prevention of Blindness, Washington, D. C.

Illinois

"The Illinois Society for the Prevention of Blindness offered a course of lectures to case workers in Chicago during the month of February and March. The course was offered in conjunction with the work on Blind Pension, which is sponsored jointly by the Cook County Bureau of Public Welfare and the Illinois Society for the Prevention of Blindness.

"There had been a feeling that a more intelligent referral for Blind Pension would be made if the case workers throughout Chicago understood more clearly the problems of prevention of blindness and restoration of vision.

"The following course of lectures was offered:

"1. Preventing Blindness in Illinois, Audrey M. Hayden.
2. The Normal Eye and How it Functions, Peter Kronfeld, M.D.
3. Diseases of the Eye as They Occur in Adult Life, Glenway W. Nethercut, M.D.
4. The Eyes as Affected by General Health, Peter Kronfeld, M.D.
5. Present Policies on Blind Relief in Cook County, Ruth Douglass.
6. Psychological Attitudes of the Visually Handicapped Toward Treatment, Ruth Emerson.
7. Field Trip to the House of Vision.
   Field Trip to Illinois Eye and Ear Infirmary.

"Eighty-five people registered for the course. The registrants were case workers from the Cook County Public Welfare Board, the Divisions on Old Age Assistance, Aid to Dependent Children, and Blind Pension Service; Chicago Relief Administration, Jewish Social Service Bureau, United Charities, Salvation Army, Douglass Smith Foundation, Board of Education. Case workers from the following hospitals attended the lectures:

"University of Chicago Clinics, St. Luke's Hospital, Provident Hospital, Mt. Sinai Hospital, Cook County Hospital, Northwestern University Clinics, Women's and Children's Hospital and Mercy Free Dispensary.

"Great interest in the course was shown by those taking it."

—*Illinois Society for the Prevention of Blindness, Chicago, Illinois*

Kentucky

"*Development and Progress of Public Health Work in Kentucky.*—There is probably nothing in public health more dramatic or better illustrative of accomplishments in a campaign against a single disease than the program for the eradication of trachoma in Kentucky. From 1912 to 1917, the United States Public Health Service, in co-operation with the State Board of Health, established five hospitals for the treatment of this disease, four located in eastern and southern Kentucky, and one in the western part of the

state. In that early period this maiming disease of the eye was widely prevalent in many counties; in one county of eastern Kentucky it attacked, either in mild or more severe form, as many as sixty per cent of the entire population. With the aid of these hospitals and co-ordinated efforts on the part of the state and county health workers, trachoma has been gradually overcome until now no county in the state has more than three per cent of its population afflicted. At present only one hospital, with a bed capacity of thirty-five, is maintained—that at Richmond. Many thousands of Kentucky citizens have been saved from visual defects or blindness from this disease.

"Coincident with the campaign for the prevention or relief of trachoma, state and local health workers have devoted all the energies possible to the prevention or relief of gonorrheal ophthalmia in the newborn. All physicians and midwives in the State are kept supplied with ampules of silver nitrate solution and are required to instil in the eyes of the newborn this drug for the prevention of gonorrheal ophthalmia, with the result that this disease has been held to a minimum. However, each year there have been some cases, and it is here that Miss Linda Neville of Lexington, Kentucky, with the aid of funds secured through her own individual resources, and, in more recent years, supplemented by state funds especially provided, has accomplished results that almost stagger the imagination. In the last thirty-three years this good woman has been able to get the best scientific medical services available for the intensive treatment of babies afflicted with ophthalmia neonatorum. Universally, the eye specialists have given their services without cost to save a very great number of these little ones from ultimate blindness. Health officers throughout the state are able, on a moment's notice, to get hospitalization and treatment, and Miss Neville responds day or night. Her files are replete with some of the most dramatic incidents of precious little babies being saved from blindness. In addition, a corresponding service has been made available to other children and adults, with other remedial eye defects, who are not able to procure scientific treatment for themselves. Many hundreds of children examined in schools and at preschool clinics, found with defects of vision and known to be retarded in their school progress, have been supplied with corrective glasses. Here again the results have been spectacular."

Maryland

"Miss Eileen Lester, formerly connected with the Institute of Ophthalmology of the Presbyterian Hospital in New York City,

was appointed Executive Secretary of the Maryland Society for the Prevention of Blindness on January 1, 1942, succeeding Mrs. Francis Woodward Little, who resigned after fifteen years of service.

"The president of the Society, Mr. Edward Esher Yaggy, Jr., is now serving as Captain in the United States Army Air Corps, and Mr. G. Wilson Younglove, Illuminating Engineer of the Gas and Electric Light and Power Company of Baltimore, has been appointed to succeed Mr. Yaggy.

"After five years of untiring efforts, the Fireworks Bill, sponsored by the Society and actively supported by almost every organization in Maryland, passed the Legislature and was signed by the Governor. After the Governor signed the Bill, the fireworks interests circulated a petition for referendum. If this petition had complied with the Maryland law with respect to referendums, the Fireworks Bill would not have gone into effect until after it had been submitted to and approved by the voters of Maryland at the next general election in 1942.

"The existence of the petition did prevent the Bill from being enforced in 1941, but due to the publicity and warnings arising out of the legislative fight and to rules promulgated and enforced by the Insurance Commissioner, injuries during the past Fourth of July celebration were substantially reduced.

"Further delay has been prevented by the decision of the Circuit Court of Baltimore City, which ruled that certain statutory provisions pertaining to petitions for referendum had not been complied with, and that the petition was invalid and void. The result of the litigation is that the Bill as passed by the Legislature and signed by the Governor is now the law of Maryland."

—*Maryland Society for Prevention of Blindness, Baltimore, Maryland*

Minnesota

"The Minnesota Society for the Prevention of Blindness is conducting a survey of the eyes of school children in rural Hennepin County. The project has been endorsed and aided by the Minnesota Academy of Ophthalmology and the Minnesota Society for the Prevention of Blindness and Conservation of Vision, with the cooperation of the Minnesota State Medical Association, the Hennepin County Medical Society, and the Public Health Agencies.

"The program started in April and will continue until rural schools close, to be continued in the fall of 1942. Vision tests are made by nurses and medical eye examinations by eye specialists. An analysis of the types of visual defects found and their causes,

with definite recommendations for their correction, will be available, to lay a foundation for further surveys in other counties. Co-operation of the ophthalmologists of Hennepin County has been assured and arrangements are being made to care for the medically needy in free clinics. Eye conditions requiring treatment, refraction or sight-saving facilities are reported to the family physician, who in turn refers the child to an ophthalmologist for more complete examination and treatment.

"The results of this survey should serve as an index for eye conditions in other counties and stimulate attempts to carry out Conservation of Vision Programs in their rural schools. The project should result in saving of eyesight of many rural students who otherwise would not receive care. It will further demonstrate the importance of *complete eye examinations* as a part of physical examinations of all pupils of school age."

—*Minnesota Society for the Prevention of Blindness and Conservation of Vision, St. Paul, Minnesota*

New Hampshire

"For the first time in the thirty-seven years of the history of the New Hampshire Conference of Social Welfare, Sight Conservation was one of the seven sectional group meetings at its annual meeting in January, 1942.

"Mrs. Eunice W. Wilson, Director of Social Service, Massachusetts Eye and Ear Infirmary, Boston, Massachusetts, spoke on the 'Responsibility of the Social Worker in Sight Conservation.' Mrs. Wilson brought out the fact that there was no category which did not offer the social worker a challenge to participate in a sight conservation program. The importance of finding cases and the follow-up for treatment regardless of category were among the points emphasized.

"The workers that were present enjoyed hearing Mrs. Wilson and felt that she gave a great deal. Those who could not attend and yet have been fortunate enough to read her paper realize how much good material she had to offer to the social workers, not necessarily in medical social work.

"The membership of the Conference is not large. Therefore, the attendance of twenty-six people representing four different organizations was considered excellent.

"In the May, 1941, meeting of the New Hampshire State Medical Society, the Medical Advisory Committee of Ophthalmologists to the Department of Public Welfare sponsored a speaker on glaucoma. As a result the doctors feel that the general doctor has been more conscious of glaucoma.

"After the National Society for the Prevention of Blindness annual meeting in New York City, December 4, where glaucoma and the follow-up of glaucoma cases were discussed at some length, the Medical Advisory Committee of Ophthalmologists gave their approval for the Department of Public Welfare to request all the ophthalmologists in the state to send a follow-up letter to their own glaucoma patients who do not return for treatment. The purpose is to get the patient under adequate ophthalmologist's care. Responses to this letter to the ophthalmologists are gradually beginning to come in."

—New Hampshire State Department of Social Welfare, Concord, New Hampshire

Pennsylvania

"The increasing awareness of the values of volunteer service prompts us to report about the invaluable help which we have been receiving for some time from a group of young married women. These women have been trained to assist in vision testing, and make excellent assistants; those who typewrite have been copying material on bulletin typewriters for visually handicapped children, the other members proofread the typed material. In addition to this they make a yearly contribution toward the purchase of twenty-four-point type books for our sight-saving library. They are the fairy godmothers to our program of sight-saving work for the isolated rural child!"

—Prevention of Blindness Department, Pittsburgh Branch, Pennsylvania Association for the Blind, Pittsburgh, Pennsylvania

Tennessee

"Sight Conservation Activities from November 1, 1941, to May 1, 1942.—During this six months period the Sight Conservation Service has been engaged in the following activities:

"1. The continuation of its various surveys of the blind to determine the causes of blindness.

2. The organization of a teacher-training course for sight-saving class teachers for Tennessee and the South.

3. The restoration of sight to citizens of Tennessee.

4. The prevention of blindness to citizens of Tennessee.

5. The finding of children eligible for enrollment in sight-saving classes.

6. The education of the general public and the medical profession as to the causes of blindness prevalent in the state.

"During this period 130 new cases of total and partial blindness have been surveyed and added to the combined survey, which now

includes 3,850 cases of total and partial blindness in the State. The most important causes of blindness prevalent in Tennessee, according to this survey, are:

1. Cataracts, except traumatic.....17.92%
2. Ocular injuries.....10.50%
3. Hereditary eye conditions..... 9.97%
4. Acute infectious and contagious diseases.... 8.47%
5. Syphilis of the eye..... 8.36%
6. Glaucoma..... 6.96%
7. Refractive errors..... 6.57%
8. Congenital defects..... 3.96%
9. Ophthalmia neonatorum..... 2.92%
10. Focus of infection..... 2.64%
11. Sympathetic ophthalmia..... 1.74%
12. Cardiovascular diseases..... 1.41%
13. Neoplasms of brain and eye..... .82%
14. Pterygium..... .77%
15. Systemic diseases..... .61%

"Of these 3,850 cases, 2,154, or a total of 56 per cent, have a chance to have varying degrees of sight restored to them in one or both eyes, by various ophthalmological procedures, and 2,529 of these cases, or a total of 65 per cent, might have had blindness in one or both eyes prevented for them by proper ophthalmological and general care.

"A teacher-training course for sight-saving class teachers has been organized through the efforts of the Service, and George Peabody College of Nashville has agreed to give this course this summer, beginning June 20, and terminating August 1.

"During this period 107 persons, 86 being children and 21 being adults, have had varying amounts of sight restored to them in one or both eyes, either by surgery and glasses, surgery alone, treatment, or by glasses alone.

"Also, during this period, 59 persons, 53 being children and 6 being adults, either have had or are having total, occupational or partial blindness prevented for them in one or both eyes. The various causes from which this blindness is being prevented are: amblyopia and hyperopia, amblyopia and myopia, entropion, retinal detachment, progressive myopia, syphilis and trachoma.

"Thirty-six children have been found who, because of serious visual defects, are eligible for enrollment in sight-saving classes, and two sight-saving classes, one for Davidson County and one for Sumner County, have been approved by the school boards of each of these counties for the next school year. Scholarships for the training of teachers for these two classes are being sought by the

State Health Department from the United States Public Health Service under its training program.

"Five talks have been made by the Director of the Service, 3 before medical students, one before the South Pittsburgh Lions Club of Marion County and one before the Eye, Ear, Nose and Throat Section of the Tennessee Medical Association on the 'Causes of Blindness in Tennessee and Their Prevention.'"

—*Sight Conservation Service, State Department of Public Health, Nashville, Tennessee*

Washington

"At the meeting in June, 1941, representatives from the five state teacher-training colleges, the State Departments of Public Instruction and of Health, and the Division for the Blind of the State Department of Social Security (including both staff members and advisory ophthalmologists), approved a standard plan for presenting to teacher-training students during 1941 and 1942 material on eye health and sight conservation. This presentation was to be made by ophthalmologists in the state and the Medical Social Work Consultant in the Division for the Blind.

"During this college year the plan has been carried out to the extent of regular meetings by ophthalmologists and Medical Social Work Consultant with health education classes in two of the state colleges of education, on a schedule which will ultimately reach all students finishing the regular four-year course; one meeting by the Medical Social Work Consultant with students at the third state college of education, where the curriculum in health education is in the process of revision; and meetings by ophthalmologists and Medical Social Work Consultant with some classes at the state university. The total number of students reached in these classes is at least 250. It is the hope of those concerned in this program, particularly the Division for the Blind and the State Department of Public Instruction, that ultimately all teachers trained in the state institutions of higher education will have received authoritative instruction on eye health and the teacher's responsibility for sight conservation. A follow-up meeting is planned for June, 1942, to examine the results of the program during the past year and to make recommendations for future activity.

"The 1941 session of the state legislature passed a bill providing that the State Superintendent of Public Instruction should establish a library of sight-saving materials to be available on loan to public schools having visually handicapped students, but not enough to establish a special sight-saving class. As no special funds were made available to implement this legislation, the

Medical Social Work Consultant of the Division for the Blind has given consultation service to schools with single visually handicapped children during the past year, at the request of the State Department of Public Instruction and in close co-operation with its staff. Response from schools in various parts of the State has been gratifying, and 8 visually handicapped children in 7 different schools have been served by this means. Follow-up study is planned to determine the progress of the children under this plan. In addition plans have been worked out for establishment of a new sight-saving class in a community which has not previously offered this service to its visually handicapped children. Actual opening of the class awaits only securing a trained teacher.

"On November 1, 1941, there went into effect a previously voted ruling of the Medical Eye Advisory Committee of the Division for the Blind requiring certification by the American Board of Ophthalmology for any ophthalmologist doing eye surgery under the Division's treatment and surgery program. This has tended to centralize performance of eye surgery under the program in a few cities in the state, and makes it necessary for more persons to go outside their home counties for eye care, but assures them the services of surgeons meeting the standards set up by the medical profession for this specialty."

—Division for the Blind, State Department of Social Security, Olympia, Washington

Note and Comment

New Army Policy in Visual Standards.—An order issued by the Surgeon General of the Army and published in *The Journal of the American Medical Association* for March 28, lists a wide variety of physical defects which heretofore have stood as a barrier to service in the Army as now being considered acceptable for limited service with waiver. In addition there are enumerated a number of conditions on which waiver may be accepted for general military service. The eye conditions now permissible are indicated as follows:

"Vision 20/400 in each eye corrected with glasses in possession of the examinee to 20/20 in one eye and to at least 20/40 in the other, provided no organic disease of either eye exists.

"Blindness, or vision below 20/400, in one eye with vision 20/100 corrected with glasses in possession of the examinee to 20/20 in the other, provided there is no organic disease in the better eye and no history of cataract or other disease in the more defective eye which might be expected to involve the better one, and provided that, in case of the absence of an eye, the individual is fitted with a satisfactory artificial one.

"Complete color blindness."

Light Colors Painted on Machinery Improve Seeing.—Color contrast and brighter colors than the usual dark green or gray of machine tools increase the accuracy of seeing, provide more comfortable working conditions, increase production and reduce accident hazards, Arthur A. Brainerd of the Philadelphia Electric Company and Matt Denning of the du Pont Company found, after a two-year investigation. Light buff and light gray gave the best results of the solid colors, with aluminum color and light blue next in line. The most satisfactory of all, however, was found to be a two-tone scheme in which all machines were painted "horizon gray" and the working area "spot-lighted" with light buff. The work is being continued in several industrial plants, the experimenters said, and further data will soon be available.

Former REVIEW Editor Awarded Medal.—The Leslie Dana Gold Medal, awarded annually for outstanding achievements in the prevention of blindness and the conservation of vision, will be presented this year to Lewis H. Carris, Director Emeritus of the National Society for the Prevention of Blindness, it was announced here today. The time and place of the presentation have not been decided as yet.

Mr. Carris was selected for this honor by the St. Louis Society for the Blind, through which the medal is offered by Mr. Leslie Dana of St. Louis. This highly prized token of recognition in the field of public health is given upon the recommendation of the Association for Research in Ophthalmology.

Until his retirement in 1939 from active service as Managing Director of the National Society for the Prevention of Blindness, with headquarters in New York City, Mr. Carris was for two decades in command of the forces carrying on the fight for protection of eyesight in America. He has also been closely identified with the work of various other public health and social welfare organizations. He was formerly Vice-Chairman of the New York State Commission for the Blind and was formerly Vice-President of the National Health Council; in 1929 he took a leading part in the formation of the International Association for Prevention of Blindness at a conference at The Hague, and served as its American Correspondent thereafter.

Mr. Carris, who is seventy-two years old, maintains a summer home in Bainbridge, New York, and a winter residence in Venice, Florida. He has received degrees from Hobart College and Columbia University, and he also attended Union College and Harvard University. Hobart College made him a Doctor of Laws in 1933.

Before entering the field of sight conservation at the close of the First World War, Mr. Carris was a well-known educator. When the Federal Board for Vocational Education was established in 1917, he was appointed Assistant Director of Industrial Rehabilitation and subsequently became Administrative Head of the Board.

The conditions of the Leslie Dana Medal award set forth that it is to be made for "long meritorious service in the conservation of vision, in the prevention and cure of diseases dangerous to eyesight; research and instruction in ophthalmology and allied sub-

jects; social service for the control of eye diseases; and special discoveries in the domain of general science or medicine of exceptional importance in conservation of vision."

Farsightedness and Visual Clarity.—Farsighted persons cannot see distant objects more clearly than persons with normal eyesight, *Hygeia, The Health Magazine* points out in answer to an inquiry.

"The so-called far-sighted eye is smaller than the normal eye," *Hygeia* says, "and therefore parallel rays of light focus behind the sensitive screen (retina). For the far-sighted person to see far objects clearly it is necessary for the lens muscle to help in bringing the focus on the retina; the normal eye sees the distant object without any muscular effort. With this muscular action the far-sighted person may be able to see objects at a distance just as clearly, but certainly no more clearly, than one whose eyesight is normal."

Explosives Manufacturers Warn Against Blasting Caps.—The Institute of Makers of Explosives is distributing literature in an educational campaign to protect children from the dangers of playing with blasting caps. Many boys and some girls have been killed and many have been blinded or otherwise seriously injured in playing with or handling explosive caps. Most of the blasting caps are found by children where they have been left by careless adults. The children hammer, pick, throw them in fires, or otherwise explode them. The result is nearly always painful or crippling. The great majority of such accidents take place either in rural localities or near small towns, and about 90 percent of the victims are boys.

American Recommended Practice of Industrial Lighting.—On March 17, *American Recommended Practice of Industrial Lighting*, a report prepared by the Committee on Lighting Practice of the Illuminating Engineering Society, with the active collaboration of a Sectional Committee organized under the procedure of the American Standards Association, received official approval as American Recommended Practice A-11—1942 from the American Standards Association.

Of recognized importance to the efficiency of the nation's war effort in that it presents factory owners and operators with a guide

to good, up-to-date lighting practice, this comprehensive report is intended to supersede the I.E.S. revised "Code of Lighting: Factories, Mills and Other Work Places," which was approved as an American Standard in 1930. "Recommended Practice of Industrial Lighting" was originally issued in 1939. Subsequently, it underwent several revisions based on new developments in light sources and equipment, and in June, 1941, it was submitted for approval to an A.S.A. Sectional Committee on Industrial Lighting, composed of representatives from 23 societies and organizations whose opinions were based upon experiences gained in widely separated fields. This committee included manufacturers, employers, employees, independent experts and educators, insurance representatives, utilities, and governmental bodies, such as the United States Department of Labor, the Navy Department and the War Department.

Following acceptance by this Sectional Committee, "American Recommended Practice of Industrial Lighting" was approved on December 11 by the Council of the Illuminating Engineering Society, and on December 12 it was submitted to the American Standards Association, where it has been undergoing final standardization procedure prior to its recent official acceptance.

The distinguishing feature of this new edition of I.E.S. industrial lighting recommendations is its emphasis upon basic principles of good lighting, including the "vital correlation between lighting and plant safety, the salient differences between good and poor illumination, and some of the precautions which must be observed before adequate and suitable lighting—and, hence, good seeing—can be achieved and maintained."

The benefits which good illumination can bring to an industrial plant are outlined and commented upon in this report. Although the advantage of increased safety is stressed, greater accuracy of workmanship, expanded utilization of floor space and improved morale are also pointed to as means of speeding up industrial production through better lighting.

Factors of good illumination are discussed in detail with regard to both quality and quantity of light. Specific attention is paid to glare and to distribution and color of light, and minimum standards of illumination are recommended, with minimum operating foot-

candles for various seeing tasks in many different industries. Both natural and artificial lighting, as well as the problems relating to maintenance and wiring, is considered, and authoritative information on these subjects is presented. The volume also contains an extensive and workable bibliography and numerous halftone illustrations supplementing the text.

Test of Loss of Vision.—Electroencephalography, a method of recording the electrical activity of the brain, roughly analogous to the use of electrocardiography in studying the activity of the heart, is a reliable objective test of true as opposed to malingering or hysterical blindness, Frederick Lemere, M.D., Seattle, declares in *The Journal of the American Medical Association* for March 14.

"As there has never been a reliable objective test for blindness," Dr. Lemere says, "a physician suspecting hysterical blindness or malingering may be unable to confirm his diagnosis. Conversely, the physician may feel confident that a patient is not a malingerer and yet be unable to prove genuine blindness. It was just such a situation that led to this study. The value of a reliable objective test for blindness, especially in compensation cases and in military medicine, is obvious. . . ."

He explains that the most prominent brain waves are the alpha waves, with an approximate rhythm of 8 per second. These waves appear on the electroencephalograph only with the eyes shut, as they arise almost entirely from the visual cortex and are broken up when the eyes are open and the subject looks at an object.

"A uniform visual field of light or dark, or even a field containing blurred indefinite outlines," the doctor continues, "usually does not interrupt the alpha rhythm. It requires a definite visual pattern to break the alpha rhythm. If a blind or partially blind subject attempts to look at an object, such as a pencil, and the alpha waves persist, one can conclude that there is not enough vision left to distinguish objects or to be of practical value to the patient. On the other hand, if a supposedly blind person is asked to open his eyes and look around and the alpha waves stop, one can conclude that there is enough vision left to distinguish objects at least, and one can with reasonable safety make a diagnosis of malingering or hysterical blindness. . . ."

Current Articles of Interest

Clinical Observations Using Certain Factors of the Vitamin B Complex as Therapeutic Agents in Ophthalmology, William B. Clark, M.D., *Southern Medical Journal*, May, 1942, published monthly by the Southern Medical Association, Empire Building, Birmingham, Alabama. Dr. Clark reports the following conclusions:

"1. While certain factors of the vitamin B complex seem to be of definite value in the treatment of certain eye diseases, the indiscriminate use of them without careful preliminary study of the patients will undoubtedly lead to disappointment in many instances.

"2. More work should be done in an effort to determine which cases of superficial corneal vascularization are due to ariboflavinosis and which are due to other causes.

"3. The use of vitamin B_6, or pyridoxine, in the treatment of hypocyclosis opens a new field worthy of further investigation."

The Experimental Radiography of Small Fragments of Glass in Relation to the Human Eye, R. U. Gillan, *The British Journal of Ophthalmology*, March, 1941, published monthly by the British Journal of Ophthalmology, Ltd., London, England. The author presents the following practical conclusions:

"1. That most kinds of glass in common use are opaque to *x*-rays.

"2. That small fragments of the order of ½–2 mm. in thickness show an opacity when exposed through the thickness of the eye and eyelids, and in addition through the thickness of the skull, but that fragments of under 1 mm. in thickness may be difficult of detection in such conditions.

"3. It may be concluded that pieces of glass actually in the eye or orbit and exposed to *x*-rays under comparable conditions would also show, but that, having regard to the somewhat greater distance of the foreign particles from the film in such a case, fragments of under 1 mm. in thickness would *a fortiori* be difficult of detection."

Gas-Gangrene of the Eye, Alexander G. Cross, M.B., *Lancet*, November 1, 1941, published weekly by E. & S. Livingstone,

Edinburgh, Scotland. The author considers the published reports of cases of gas-gangrene panophthalmitis and describes twelve cases treated at the Royal London Ophthalmic Hospital. The panophthalmitis developed in each case within twenty-four hours after the perforating wound of the globe and was accompanied by severe pain but little general disturbance. Evisceration was performed in each case at the Ophthalmic Hospital and recovery was rapid. No deaths have been reported from this condition.

Hereditary Optic Atrophy With Dominant Transmission and Early Onset, Major J. Graham Scott, *British Journal of Ophthalmology*, October, 1941, published monthly by Pulman, George & Sons, Ltd., 24–27, Thayer Street, W. 1, London, England. The author presents two families, totalling over 250 members, 61 of whom had optic atrophy. Of these, 32 were male and 29 female. Onset, gradual and unnoticed, occurred at about three years of age. He found that color vision was not lost early, and that there was no subsequent deterioration or improvement of visual acuity. The base of the "hill of vision" was normal, but the peak was lost. The disc was white, edges clear-cut, deep cup; the remainder of the fundus was normal, bar the absence of the normal light reflex at the macula.

Interpretation and Evaluation of Tests for Strabismus, William T. Davis, M.D., and Ernest Sheppard, M.D., *Southern Medical Journal*, June, 1941, published monthly by the Southern Medical Association, Birmingham, Alabama. The author carefully reviews the importance of the history, perimetric measurements, screen testing, excursions and rotations, convergence, vergence, and diplopia tests, sensorial relationships, and the Maddox rod. He points out that, in the majority of strabismus cases, more than one test is necessary, and it is the comparison of the findings that gives the necessary diagnostic information. The personal equation and the psychological effect of squint on a child should be considered. The author concludes that it is becoming increasingly important from an occupational viewpoint to obtain not only a cosmetic but a functional cure, the latter of which, in the majority of cases, cannot be obtained without the aid of orthoptic training.

Book Reviews

MODERN FACTORY LIGHTING, Including Special Wartime Requirements. Issued jointly by the British Electrical Development Association and the E.L.M.A. Lighting Service Bureau. Colchester, London & Eton: The Ballantyne Press, 1940. 140 p. ill.

This concise handbook on factory lighting very aptly begins with a discussion of vision. The reader is reminded that following a million years or so of development of the human race during which visual demand was limited to viewing large objects under daylight conditions, human eyes have had only about one hundred years to become accustomed to modern conditions of exacting visual concentration, much of it under artificial light, and all of it with a much shorter night period for recuperation; that industrial development has outrun evolution.

The discussion of the relation of visual acuity to illumination cites the investigation of Dr. R. J. Lythgoe, and his conclusion ". . . that the increase of visual acuity continues up to, and probably beyond, 1,275 foot-candles, providing that the surroundings are adequately illuminated."

Speed of vision is illustrated by a chart in which "it will be seen that the gain is maintained steadily as the illumination is raised."

Over a half million pounds sterling of accident compensation cost is attributed to bad lighting. The effect of illumination on production, reduction of spoilage, psychology and health, all correspond with American experience, and demonstrate that proper illumination is an essential element of good industrial management.

Chapters 2, 3 and 4 deal with technical details of British practice in illumination, including computations to determine the overall cost of lighting using these systems.

Chapter 5, on special industrial problems, is particularly valuable for its illustrations and suggestions covering special types of lighting for various industrial problems. The advantage of directional lighting over diffused lighting for certain types of industrial visual requirement is particularly important, because it corrects a popular fallacy that shadowless lighting is always best.

Wartime control of factory lighting is dealt with in the last

chapter of the book. Black-out arrangements are described and illustrated in detail. The arrangements include stationary and movable shutter devices to permit ventilation without light showing, provision for loading bays for trucks with efficient light traps and "light locks" whereby trucks may enter or leave lighted buildings under black-out conditions.

The appendices deal with technical matters more particularly of interest to the illuminating engineer, and include bibliography of recent scientific investigations of lighting in industry.

The volume suggests that our English cousins are abreast with us, if not advanced, in their viewpoints on illumination as a production factor. The book is a fine piece of informative writing and compilation, and worthy the attention of industrial managers.

—CHARLES P. TOLMAN

PLAY FOR CONVALESCENT CHILDREN. Anne Marie Smith. New York: A. S. Barnes and Company, 1941. 133 p.

Because eye patients recovering from acute conditions or exacerbations of a chronic condition are often told to curtail reading or other close eye work, the new book, called *Play for Convalescent Children*, has many values for all those concerned with eye patients. The main theme of the book is how to make the recovery period one of progressive development of constructive attitudes instead of a time for growth of invalid habits of self-pity. Some of the retrogressions to childish attitudes common in all illness and the frustration due to cutting off of usual recreational outlets could be obviated in eye patients by the use of planned recreation. The general principles outlined and most of the methods described are applicable to adult patients as well as children, although they are presented on the basis of an experiment in a large children's hospital with a twelve-year age limit. The recommended forms of recreation demand active participation by a patient—not necessarily physical activity but genuine participation—so that his attention is focused on matters outside of himself. Slight adaptations and additions would, of course, be made by anyone with sufficient insight into human behavior and imagination to utilize the content of the book. The restriction for individual patients would vary but would always be the guiding factor.

Considerable space is devoted to the nurse and how the disciplinary problems of the ward may be solved before they arise by the use of simple play techniques. The play leader served as instructor to the student nurses in this aspect of their work just as she was teaching volunteer recreation aids and students in the Sociology Department, Northwestern University. Undoubtedly these teaching relationships stimulated the thoughtful work done and the effort to share the experience gained with others.

It is a pity that the writer of the book, who is staff instructor, Leaders' Training School, Community Recreation Service, Chicago, draws so heavily on the authority of others rather than devoting a larger proportion of the space to the content of the experimental work carried out over about ten years. Another defect is the assumption that everyone is familiar with the names of countless games the play leaders use. Probably the author counted on a more limited and homogeneous set of readers than this reviewer believes will find the book both useful and stimulating. Perhaps the largest single group who will find this book full of helpful suggestions is the parents of children who are ill or the relatives of older patients. If nurses and social workers, teachers and those responsible for children in time of "incident" have not read it because of the needs of their own relatives, they will sooner or later want the wealth of helpful material in it for use in their work. Those who need to be able to gain the confidence of children or helpless people in a short time will find both practical and ingenious ways of reaching their objective. One of the smaller groups of people who will find *Play for Convalescent Children* specifically helpful are the staffs of all convalescent institutions. The boards of managers will surely appreciate the lists of books and games found most useful; these should lead to economy of time in selection of materials.

—ELIZABETH G. GARDINER

Briefer Comment

FUNDAMENTALS OF PHYSICAL EXAMINATION. George G. Deaver, M.D. Philadelphia. W. B. Saunders Company, 1939. 265 p.

Designed as a manual for nurses, physical educators, teachers and medical social workers, this volume concisely describes the presenting symptoms of abnormal functioning of the body systems. Of particular interest to readers of the REVIEW is the chapter on the diseases of the eye, covering procedures of examination for visual acuity, lateral and vertical imbalance, ametropia, etc., and emphasizing the importance of early recognition of external affections.

AN ACCOUNT OF TWELVE MONTHS OF HEALTH DEFENSE: Containing the Activities of the Health Department of the City of New York for 1940, with Comparative Vital Statistics Tables and a Review of Developments since 1934. Fiorello H. LaGuardia, Mayor; John L. Rice, M.D., Commissioner of Health. Department of Health, City of New York, 1941. 283 p.

This is a book of straight factual information on trends in public health problems in New York City. The tabulated material includes detailed statistics on diseases of pregnancy and childbirth; diseases of the nervous system and sense organs; the major causes of death in New York City, and the national, racial and age groups among whom the greatest number of yearly deaths occur; and charts of births by many factors, including sex, attendant at delivery and serological test for syphilis.

Increasingly thorough parochial and public school examinations are reported and new methods described for bringing children with definite health problems to the physician's attention. The year 1940, incidentally, was the first year in which vision testing instructions were given to teachers in the parochial schools of the Bronx, Manhattan, and Richmond—although the city's public schools have been employing the Snellen test for years.

There is a brief report on examinations made during the year in the Department's 16 eye clinics and on the number of children sent to sight-saving classes conducted by the Board of Education.

Several chapters are devoted to the larger subjects of tuber-

culosis and venereal disease control, food and drug inspection, and the administrative set-up of the many departmental units concerned.

THE PUBLIC HEALTH NURSE IN ACTION. Marguerite Wales, with a foreword by Lillian D. Wald. New York, 1941. 437 p.

The former general director of the Henry Street Visiting Nurse Service has prepared this attractive volume primarily for undergraduate nursing students who plan to do public health work, and for nurses doing graduate work in that field. However, it is not intended to be a manual or textbook. It is the purpose of the book "to show how nurses in the field apply the general principles formulated by the standard texts." Nurses all over the United States contributed the detailed case studies and reports which make up the book. The principles of nursing which are demonstrated in the informal narrative are printed in italics and made to stand out from the main body of the text, so that they may be read first in their entirety.

The rôle of the public health nurse as educator is emphasized, and, in a large section devoted to care of mothers and babies and to infant and preschool health, each illustrative case history stresses the public health nurse's importance in adapting generalized health principles to the specific living habits and economic status of the individual family.

Contributors to This Issue

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The executive director of the National Society for the Prevention of Blindness, **Mrs. Eleanor Brown Merrill,** needs no introduction to readers of the REVIEW. She is also secretary of the National Health Council for 1942.

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As supervisor of the Division of Child Welfare, Oklahoma Department of Public Welfare, **Laura E. Dester** brings the benefit of her experience to her subject in this issue of the REVIEW.

A practising ophthalmologist in New York City, **J. Vincent Flack, M.D.,** is at present serving in the United States Navy Medical Corps as a Lieutenant Commander.

Elizabeth G. Gardiner, a past president of the American Association of Medical Social Workers, has been directing the Society's medical social work program for the past three years.

Book reviewers: **Charles P. Tolman,** an ex-president of the National Safety Council and closely associated with its policies for many years, is acting as consulting engineer on the Society's staff in connection with its industrial program; and **Elizabeth G. Gardiner,** mentioned above.